

Mixed Analyte Performance Evaluation Program

Water Sample MAPEP-01-W9
Performance Report

February 11, 2003

U.S. Department of Energy
Radiological and Environmental Sciences Laboratory
850 Energy Drive MS4149
Idaho Falls, ID 83401

MAPEP-01-W9 Performance Report

Summary

The U.S. Department of Energy's Radiological and Environmental Sciences Laboratory (RESL) administers the Mixed Analyte Performance Evaluation Program (MAPEP). MAPEP is the only performance evaluation program that targets radiological and non-radiological constituents (i.e., mixed analytes) from the same sample for quantification and analytical performance evaluation. MAPEP participants can efficiently demonstrate their proficiency in radiological, stable inorganic, and organic analyses from the same single blind MAPEP performance evaluation sample. MAPEP is performance based and does not dictate the analytical methodology.

MAPEP-01-W9 water sample was distributed to 79 laboratories in January 2002. The water sample contained spiked metals and radiological components of interest to DOE facilities. The water sample was prepared from a natural groundwater (mountain spring) matrix. Semi-volatile organic target analytes of interest were spiked into a separate water sample of the same matrix. Some analytes on the MAPEP-01-W9 sample description were not added to the water sample. This allowed MAPEP to determine if any laboratories reported false positive results for these specific analytes. Depleted uranium was also added to alter the expected specific activity of U-238 and modify the expected isotopic ratio for U-234/U-238. These modifications were used to increase sample complexity and provide variation among MAPEP sample distributions. The water sample contained the following target (including false positive test) analytes:

RADIOLOGICAL:

$^{241}\text{Americium}$	$^{134}\text{Cesium}$	$^{137}\text{Cesium}$	$^{57}\text{Cobalt}$	$^{60}\text{Cobalt}$
$^{55}\text{Iron}$	$^{54}\text{Manganese}$	$^{63}\text{Nickel}$	$^{238}\text{Plutonium}^{***}$	$^{239}\text{Plutonium}$
$^{90}\text{Strontium}$	$^{234}\text{Uranium}$	$^{238}\text{Uranium}$	$^{65}\text{Zinc}$	

STABLE INORGANIC:

Antimony	Arsenic	Barium	Beryllium***	Cadmium
Chromium	Copper	Lead	Nickel	Selenium
Silver***	Thallium	Vanadium	Zinc	

ORGANIC:

1,3-dichlorobenzene	hexachloroethane	nitrobenzene	2,4-dimethylphenol	1,2,4-trichlorobenzene
naphthalene	2,4-dichlorophenol	hexachloro-butadiene	2,6-dinitrotoluene	2,4-dinitrotoluene
2,6-dichlorophenol	diethylphthalate	anthracene	hexachloro-benzene	pentachloro-benzene
fluoranthene	benzo(a)anthracene	pyrene		

***These analytes were used in false positive tests.

Ten (10) of the original 79 laboratories that requested participation did not return data for this study. One of these laboratories did not report data due to laboratory closure and one laboratory apparently ceased DOE laboratory support. The remaining eight laboratories did not report results for MAPEP-01-W9 for an unknown reason. Eleven (11) of the 16 foreign laboratories returned analytical results and are part of the data package. Appendix A of this report identifies the MAPEP participants and their reporting status for this test session.

The MAPEP studies have generated sufficient historical data to examine past performance. As a result of historical performance review, six laboratories were sent letters of concern pointing out potential quality issues that they may wish to address. These letters were sent to laboratories that demonstrated two consecutive failures or significantly biased (warning level) results for any given analyte. The complete historical MAPEP participation may be requested from the MAPEP Coordinator.

MAPEP-01-W9 Performance Report

Mixed Analyte Performance Evaluation Program water sample MAPEP-01-W9 was distributed in January 2002 to 79 analytical laboratories for the determination of radiological, inorganic, and/or semi-volatile organic constituents. Radiological analyses were performed with standard alpha, beta, and gamma detection methods. Inorganic and semi-volatile organic constituents were determined utilizing U.S. EPA SW-846 methods. A total of 69 laboratories reported results. The laboratory data and performance evaluation results are provided in this report.

SAMPLE PREPARATION AND DISTRIBUTION

Participants

MAPEP participants are identified by a unique laboratory code. The cross-references for these laboratory codes are found in Appendix A. Appendix A also lists the laboratories that participated in this performance evaluation study and serves as a list of participants that are consistently requesting MAPEP samples.

Sample Preparation – Radiological / Stable Inorganic Analytes

Natural groundwater from a mountain spring near Swan Valley, Idaho, was used for sample preparation. Analyses for background levels of all the targeted radiological and stable inorganic analytes were performed. The nitric acid used for the sample preservation was high quality double distilled. Solutions of the elements and radionuclides used in the preparation of MAPEP-01-W9 were obtained from vendors who provided documentation showing that the concentration of each constituent was traceable to the National Institute of Standards and Technology (NIST). The sample was prepared in an acid-washed polyethylene carboy with a dispensing spigot near the bottom of the container. A total volume of 125 liters was prepared. This included sufficient samples for verification, stability testing and 79 samples for distribution to MAPEP participants. The reference date for radioactive decay was December 1, 2001, 12:00 Mountain Standard Time. RESL is directly traceable to the National Institute of Standards & Technology (NIST) for both the preparation and analysis of environmental samples in a variety of matrices. RESL participates in the National Analytical Management Program's (NAMP) Radiological Traceability Program.

Sample Preparation - Semi-volatile Organic Analytes

Natural groundwater taken from the same spring identified above was used for sample preparation. One liter of water was placed in each of 40 one-liter, precleaned sample bottles. One milliliter of 0.01% sodium thiosulfate was added to each sample. Each bottle was spiked with a certified, custom made semi-volatile organic standard using a Hamilton (No. 81165) 250 microliter glass syringe. This included sufficient samples for characterization and 35 samples for distribution to domestic MAPEP participants. Four foreign laboratories were each sent 1.0 milliliters of the spiking solution in flame sealed vials along with directions for spiking a water sample to simulate the MAPEP-01-W9 water study.

MAPEP-01-W9 Reference Values

Reference values and uncertainties for this study can be found in Appendix D. The radiological and stable inorganic reference values incorporate the total uncertainty of the NIST traceable standard and the sample preparation methodology. The uncertainties are reported at one standard deviation. The stable inorganic reference value for zinc was derived from the results of EPA Methods 3050 and 3051 experimental determinations. The uncertainty is reported at one standard deviation. The reference values for the organic target analytes were determined as the Biweight mean of all laboratory data for the analyte. The semi-volatile reference value uncertainties are derived from the data reported by the participating laboratories and

represent the 95% confidence interval for the mean of the data (excluding outliers). This calculation is analogous to the classical confidence interval for the mean of a population:

$$T_{bi} \pm \left(t_{(0.95,n-1)} \right) * \frac{S_{bi}}{\sqrt{n}}$$

Where T_{bi} = Biweight mean

S_{bi} = Biweight standard deviation

n = number of observations

$t_{(0.95,n-1)}$ = Student's t value at the 95% confidence interval and n-1 degrees of freedom.

LABORATORY RESULTS

Data Treatment

The data received from the laboratories are listed in Appendices B and C. Estimates of the mean and standard deviation are calculated using traditional statistical calculations. The Statistical Summary in Appendix B shows the overall performance of the 69 reporting laboratories for each of the target analytes. In this summary, the 'T(1)' column displays the total number of laboratories reporting data for a particular analyte. The 'A(2)' column displays the total number of laboratories with acceptable data that were used to develop the grand mean and standard deviation in the subsequent columns. The Acceptance Range identifies the values that delineate acceptable performance. The radiological and stable inorganic data that were outside the $\pm 30\%$ acceptance window are not included in the mean and standard deviation calculations. Additionally, the grand mean generated in the Summary Report does not include inorganic results that were determined as the total analyte present. These data were treated separately and evaluated utilizing reference values for the total analyte concentration. The laboratories that used a total analyte methodology received the results of this separate evaluation in their individual laboratory performance report. For the organic target analytes, the grand mean and standard deviation are the Biweight mean and standard deviation respectively.

Performance reports for each laboratory follow the Statistical Summary. These reports are arranged by laboratory code in alphabetical order. The reference value for each analyte, the reported value, and the performance evaluation are presented. The Uncertainty Flag observed in the last column of these reports will be either 'L' for potentially low or 'H' for potentially high. The Uncertainty Flag is utilized in this program for information only. The acceptance criteria used for this performance evaluation are defined in Table 1.

Table 1. Acceptance criteria.

FLAG	MEANING	CRITERIA FOR RADIOLOGICAL AND INORGANIC ANALYTES	CRITERIA FOR ORGANIC ANALYTES
"A"	Acceptable	Bias $\leq 20\%$	Absolute value of Z-score ≤ 2.0
"W"	Acceptable with Warning	$20\% < \text{Bias} \leq 30\%$	Absolute value of Z-score $2.0 < \text{Z-score} \leq 3.0$
"N"	Not Acceptable	Bias $> 30\%$	Absolute value of Z-score > 3.0

Results for this study are graphically presented in Appendix C. The data for each analyte are plotted against the reference value and the grand mean. The laboratory codes are displayed along the X-axis. The error bars associated with each data point are the individual uncertainties for the measurement reported by the laboratory. Laboratories that did not report data for a particular analyte are not plotted or labeled.

Due to analyte concentrations, laboratory uncertainties and data scatter, the Y-axis varies widely throughout the graphs. Utilization of visual data scatter without consideration for the concentration range displayed may lead a reviewer to a false conclusion concerning sample homogeneity or inaccuracy of a data set. In most cases, the graphs have been scaled to present the best visual picture of the data set.

Radiological Analytes

The MAPEP program uses false positive testing on a routine basis to identify laboratory results that indicate the presence of a particular radionuclide in a MAPEP sample when, in fact, the actual activity of the radionuclide is far below the detection limit of the measurement. For this study, a false positive test was performed for Pu-238. Acceptable ("A") performance was indicated when the range encompassing the result, plus or minus the total uncertainty at three standard deviations, included zero (e.g., 0.5 +/- 0.2; range of -0.1 to 1.1). Not Acceptable ("N") performance, and hence a false positive result, was indicated when the range encompassing the result, plus or minus the total uncertainty at three standard deviations, did not include zero (e.g., 2.5 +/- 0.2; range of 1.9 to 3.1). Statistically, the probability that a result can exceed its total uncertainty at three standard deviations by chance alone is less than 1%. A three standard deviation criterion was used for the false positive test to maximize confidence in a reported detection. A result that is greater than three times its total uncertainty cannot, by most definitions, be below the detection limit. Report Warning ("RW") flags were issued if the results for a requested analyte in a false positive test were not reported, but the analysis was within the scope of the laboratory's routine function or routine capability. Reporting actual results is necessary to perform the false positive test and to demonstrate the sensitivity of the measurement. Report Warning flags were issued in this study if Pu-239/240 was determined by alpha spectrometry, but Pu-238 was not reported. If Pu-239/240 was reported, the capability should exist to report Pu-238.

Approximately 35-40 laboratories reported results for the alpha-emitting radionuclides. Laboratory performance for the actinides was generally good (see Table 2). Three laboratories received "Not Acceptable" evaluations and one a "Warning" for their Pu-239 results. One "Not Acceptable" and one "Warning" evaluation was given for Am-241 results. The "Not Acceptable" Am-241 result used gamma-ray spectrometry as the detection method. For additional complexity, MAPEP frequently varies the isotopic ratios of uranium among test sessions. The MAPEP-01-W9 water sample was spiked with depleted uranium. Two laboratories received "Not Acceptable" evaluations for U-234 and three received a "Warning." Only one laboratory received a "Not Acceptable" evaluation for U-238.

Although the preceding data appear to indicate good overall performance by the laboratories, the false positive test for Pu-238 raises concern. Of 35 laboratories reporting data for this radionuclide, 17 (49%) reported a statistically positive result (see Table 3). This is consistent with other MAPEP test sessions where more than 30% of laboratories have reported false positive results. Recently, 14 of 29 reporting laboratories (48%) showed false positive results for Sr-90 in water (MAPEP-00-W8), and 9 of 28 reporting laboratories (32%) showed false positive results for Am-241 in soil (MAPEP-01-S8). False positive results frequently initiate costly investigations, necessitate additional sampling and analyses, jeopardize data integrity, needlessly alarm the public and/or erode public confidence, and can activate a host of other unnecessary responses and expenditures. False positive results have a direct impact on the taxpayer cost of site characterization, remediation, closure, and long-term stewardship. Therefore, consistently poor performance on false positive tests is an important quality concern. LAWR02, LOCK01, MART02, and WEST03 laboratories received "Report Warnings" because they did not report their Pu-238 results and therefore could not be evaluated for the false positive test.

Gamma analyses were requested for Co-57, Cs-134, Cs-137, Mn-54, Zn-65, and Co-60. These six radionuclides together emit gamma rays across the energy spectrum from 122 keV to 1333 keV. Seven laboratories received “Warning” or “Not Acceptable” performance evaluations for gamma results (see Table 4). ADEM01 and RSAL01 laboratories appear to have data reporting errors, with RSAL01 receiving a “Not Acceptable” performance evaluation for all reported gamma results. Laboratory results for Zn-65 (mean bias 6.5%) and Cs-134 (mean bias -8.6%) showed the greatest deviation from their respective reference values. The positive bias for high-energy gamma-emitters such as Zn-65 can result from the random and coincident summing associated with common mixed-gamma efficiency calibration standards (e.g., Y-88 and Co-60 gamma emissions). The efficiency calibrations at 898 keV (Y-88) and 1173 keV (Co-60) are both near the Zn-65 key-line energy of 1116 keV. An efficiency curve that is calibrated for Co-60 may interpolate an efficiency for Zn-65 that is significantly lower than the actual Zn-65 efficiency. Therefore, the calculated result for Zn-65 will show a positive bias. The magnitude of the positive bias is dependent on the summing losses associated with the efficiency curve. Likewise, the negative bias for Cs-134 is probably due to the coincident summing of the 605 keV and 796 keV gamma emissions of Cs-134. The specific activity of Cs-134 is underestimated because the coincident summing takes counts away from the key-line 605 keV full-energy peak. The random and coincident summing affects increase with greater detector efficiency.

The beta-emitting radionuclides targeted for analysis in this test session were Sr-90, Fe-55, and Ni-63. Thirty-four (34) laboratories reported results for Sr-90. Five laboratories received a “Not Acceptable” and four received a “Warning” performance evaluation (see Table 5). There was no observable trend in the data. The majority of participants used gas-flow proportional counting and a sample size greater than 75 mL. Eight laboratories analyzed for Fe-55, with five showing “Not Acceptable” performance. Three of these results were biased low and two were biased high. Of the 16 laboratories that analyzed for Ni-63, two demonstrated “Not Acceptable” performance and one received a “Warning”. Two of these results were biased low and one biased high. Fe-55 and Ni-63 were analyzed primarily by liquid scintillation counting with sample sizes ranging from 1-100 mL.

Table 2. Laboratories that showed “Warning” or “Not Acceptable” performance evaluations for alpha-emitting radionuclides. The percent bias from the reference value is given in parentheses.

LABORATORY CODE	WARNING	NOT ACCEPTABLE
CSTL01		Pu-239 (-90.3%)
IDGR01		Pu-239 (-90.8%)
MART03	U-234 (22.4%)	
MDPH01		Am-241 (-38.7%)
NARL01	Pu-239 (-28.7%)	
PRAP01	U-234 (25.5%)	
RSAL01		Pu-239 (96.0%)
		U-234 (57.1%)
		U-238 (32.1%)
SOUT01	U-234 (-26.9%)	
UPVL99		U-234 (42.0%)
WEST04	Am-241 (21.0%)	

Table 3. Laboratories that reported a false positive result for Pu-238.

Lab Code	Result (Bq/L)	Total Uncertainty	Statistically Positive ¹	Lab Code	Result (Bq/L)	Total Uncertainty	Statistically Positive ¹
ANTE01	0.019	0.005	4.1	QUAN01	0.018	0.003	5.6
AY1201	0.018	0.005	3.5	QUAN03	0.018	0.005	4.0
CESL01	0.017	0.003	5.7	RSIR99	0.076	0.022	3.5
CSTL01	0.002	0.001	4.0	SWOL01	0.022	0.006	3.7
FERM01	0.033	0.008	4.1	TELE02	0.060	0.010	6.0
GENE01	0.020	0.004	5.0	UPVL99	0.363	0.017	21.4
HWRL01	0.018	0.005	4.0	WEST04	0.037	0.005	7.4
IDGR01	0.003	0.000	6.3	YAEC01	0.046	0.006	7.6
MART01	0.059	0.011	5.4				

1) For this study, a statistically positive result is indicated if the (RESULT / UNCERTAINTY) > 3.0. The result and total uncertainty are rounded to three decimals in the table for readability, but the number of standard deviations listed is calculated from the results as reported. LAWR02, LOCK01, MART02, and WEST03 laboratories did not report their Pu-238 results and received "Report Warnings".

Table 4. Laboratories that showed "Warning" or "Not Acceptable" performance evaluations for gamma-emitting radionuclides. The percent bias from the reference value is given in parentheses.

LABORATORY CODE	WARNING	NOT ACCEPTABLE
ADEM01		Zn-65 (293.8%)
GROW01	Co-57 (-22.1%)	
	Mn-54 (-25.2%)	Zn-65 (-32.1%)
HWRL01	Co-57 (24.7%)	
		Mn-54 (30.9%)
		Zn-65 (42.8%)
MART01	Cs-134 (-22.8%)	
OTLI01		Co-57 (-32.1%)
	Zn-65 (29.6%)	
RSAL01		Co-57 (136.9%)
		Cs-134 (131.4%)
		Cs-137 (136.8%)
		Mn-54 (165.2%)
		Zn-65 (180.9%)
		Co-60 (161.7%)
WEST03	Cs-134 (-21.1%)	

Table 5. Laboratories that showed "Warning" or "Not Acceptable" performance evaluations for beta-emitting

radionuclides. The percent bias from the reference value is given in parentheses.

LABORATORY CODE	WARNING	NOT ACCEPTABLE
ADEM01	Sr-90 (25.4%)	
CDHS01		Fe-55 (-57.9%)
CORE02		Sr-90 (-36.0%)
IDGR01		Sr-90 (31.9%)
LEPD99		Sr-90 (37.7%)
LOCK03		Fe-55 (-44.6%)
NESI01		Sr-90 (-30.8%)
		Fe-55 (-32.4%)
OTLI01		Sr-90 (40.6%)
SCAL01	Sr-90 (-23.3%)	
TELE02		Fe-55 (113.9%)
	Ni-63 (-25.4%)	
WEST04	Sr-90 (26.9%)	
		Fe-55 (49.6%)
		Ni-63 (-70.0%)
YAEC01	Sr-90 (-20.2%)	
		Ni-63 (40.3%)

Stable Inorganic Analytes

Not all of the inorganic analytes in the Sample Description for MAPEP-01-W9 were spiked into the water. Beryllium, silver, and zinc were not added to the water. Zinc was present in the base water. False positive flags were assigned for beryllium or silver results reported above the lower concentration range of 0.1 mg/L or 0.05 mg/L, respectively, as stated on the Sample Description for MAPEP-01-W9. All reporting laboratories passed the false positive test (i.e., no flags were given). For the remaining analyses, 10 laboratories received "Warning" or "Not Acceptable" performance evaluations for stable inorganic results (see Table 6).

The majority of the data reported for this performance evaluation sample originated from three instrumental analytical techniques: radial and axial view Inductively Coupled Plasma Emission Spectrometry (ICPES) and Inductively Coupled Plasma Mass Spectrometry (ICPMS). A casual review of all data (including outliers) from this test session suggests some general and analyte dependent correlations. With few exceptions, the precision and accuracy achieved by the three primary instrumental techniques appeared to be statistically similar. Slightly improved, but not statistically significant, precision was observed for arsenic, lead, and selenium when using Axial view ICPES as compared to Radial view ICPES. Overall, the precision of ICPMS appeared equivalent to axial view ICPES. There was no significant difference in accuracy. These observations apply to the current test session only and do not represent an exhaustive evaluation of these detection methods. A more extensive statistical analysis of the data reveals no significant difference among the detection methods at the 95% confidence level.

A comparison of detection methods should also consider other parameters that can influence the result, such as the sample preparation methods. The sample preparation technique used to support the detection method may have more inherit error than the detection instrument itself. Valid comparisons must ensure that the detection methods are fairly tested without being unduly influenced by the differences in sample preparation techniques. About half of the laboratories for this test session analyzed the sample as received, (i.e., no preparation). The majority of the laboratories that utilized sample preparation techniques followed EPA 3010, 3020, or 3050 methods for all analytes. Correlation of sample preparation techniques, with one exception, indicated that the precision and accuracy achieved with no sample preparation was comparable to the EPA methodology. Precision was slightly (but not significantly) improved when the EPA methodology

was utilized for nickel. A more rigorous statistical analysis of the data shows no significant difference among sample preparation methods at the 95% confidence level for all analytes.

Six laboratories reported total uranium or the uranium isotopes in the inorganic analytes section. The laboratories analyzed MAPEP-01-W9 for uranium isotopes by ICPMS, Thermal Ionization MS, Kinetic Phosphorescence, and Fluorimetry. All uranium results reported in the inorganic analytes section were within acceptable ranges.

Lead had the greatest number of "Not Acceptable" flags (2) in the inorganic analytes section, with 38 reporting laboratories (see Table 6). Both of these "Not Acceptable" results were biased high. There was no indication of a high or low bias trend specific to instrument or sample preparation technique.

Table 6. Laboratories that showed "Warning" or "Not Acceptable" performance evaluations for stable inorganic analytes. The percent bias from the reference value is given in parentheses.

LABORATORY CODE	WARNING	NOT ACCEPTABLE
CCEN99	Cd (-23.6%)	
CDHS01	Zn (-25.2%)	
CEEA99		Cr (-47.6%)
IBTN99		Cd (36.6%)
		Pb (146.3%)
		Zn (6473.6%)
LPTO99	Tl (28.5%)	
MART02		Pb (89.1%)
RECC01	Sb (-21.6%)	
SNLP01		Tl (-78.1%)
WEST03	As (-25.2%)	
WEST04	Zn (-20.4%)	As (30.3%)

Semi-Volatile Organic Analytes

The statistical treatment of the raw data was conducted following protocols developed by the EPA EMSL-CIN for the WP and WS laboratory proficiency testing programs. Reference values were calculated for each analyte by using EPA EMSL-CIN Biweight computer algorithms to determine the Biweight mean and Biweight standard deviation for each analyte. The lower and upper 95% prediction interval (PI) and the lower and upper 95% confidence interval (CI) were also determined.

Each laboratory was evaluated on an analyte by analyte basis using Z-scores as recommended by the International Standards Organization (ISO), "International Harmonized Protocol for the Proficiency Testing of (Chemical) Analytical Laboratories". The Z-Score was calculated as the laboratory result minus the Biweight mean divided by the Biweight standard deviation. The resulting Z-score may either be positive or negative. A laboratory was considered to be Acceptable ("A") in the analysis of the analyte if the absolute value of the Z-score did not exceed 2.0 (i.e., less than or equal to two standard deviations from the mean). If the absolute value of the Z-score was greater than 2.0, but less than or equal to 3.0, the result was considered acceptable, but flagged as a Warning ("W"). Calculated Z-scores with an absolute value greater than 3.0 were considered Not Acceptable ("N").

Some laboratories may be graded on false negative and false positive data for this study. False negative data are associated with laboratories that did not report analyte values (or reported as less than values) for organic analytes that by consensus were determined to be present in the sample. MAPEP has determined

that some analytical laboratories do not calibrate for all the components present in the target analyte list in U.S. EPA SW-846 Method 8270 "Semi-volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS) Capillary Technique". For this reason, MAPEP will not flag results as "False Negative" nor assign a performance flag unless there is a clear indication of error in isomer determination/reporting.

A false positive flag was issued to laboratories that reported organic analytes that by consensus were found not to be present in the sample. The value reported by the laboratory was compared to the method specific detection limit. If the reported value was less than or equal to two (2) times this detection limit, the laboratory was given a "Warning" flag (i.e., proficient). If the reported value was greater than two (2) times the detection limit, the reported data were flagged as a false positive result and the laboratory was given a "Not Acceptable" performance evaluation.

Consensus in this context means the number of laboratories (n) that define the 95% Prediction Interval (or acceptance limits). The number of laboratories will exclude those laboratories reporting data considered as outliers. For MAPEP-01-W9, n = 23. Phthalates were not included in these determinations unless there was conclusive evidence that a false positive value existed.

This sample distribution contained semi-volatile organics in the form of 18 target analytes. Most of the laboratories reporting data extracted one liter of water by liquid-liquid extraction and then analyzed the sample by U.S. EPA SW-846 Method 8270 "Semi-volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS) Capillary Technique".

Twenty-three (23) laboratories analyzed the sample for semi-volatile organics. Three laboratories were given false positive flags for the identification of chrysene instead of the target analyte benzo(a)anthracene. One laboratory reported target components indicative of carry over from a quality control standard and received false positive flags for phenol, 2-chlorophenol, 1,4-dichlorobenzene, 4-chloro-3-methylphenol, acenaphthene, 4-nitophenol, pentachlorophenol and phenanthrene. One laboratory incorrectly identified 1,2-dinitrobenzene. Actual performance data are reflected in both the summary statistics report and in the individual laboratory performance report.

As a part of the Performance Measurement Assurance Program with NIST, the semi-volatiles organic standard used to prepare the MAPEP-01-W9 standard was analyzed by NIST. The agreement between the concentrations determined by NIST and the concentrations stated on the Certificate of Analysis from the manufacturer were within 5% for all the target analytes.

APPENDIX

A

**Participating Laboratories and Associated
Laboratory Code Index
for MAPEP-01-W9**

MAPEP-01-W9 Reporting Participants

Lab Code	Laboratory Name
ADEM01	Alabama Department of Environmental Management
ANLA01	Argonne National Laboratory Analytical Chemistry Lab.
ANTE01	Paragon Analytics, Inc.
ARGO01	Argonne National Laboratory West
AY1201	Y-12 Analytical Services Organization
BNEL01	BINAX / NEL
CCEN99	Comision Chilean de Energia Nuclear, Santiago de Chile
CDHS01	California State Department of Health Services
CEEA99	Comision Ecuatoriana de Energia Atomica, Quito, Ecuador
CESL01	Lawrence Livermore National Laboratory
CIRP99	China Institute for Radiation Protection, Shanxi, China
CORE01	Core Laboratories
CORE02	Core Laboratories - STL
CSTL01	CST-9, Los Alamos National Laboratory
EPAL01	Office of Radiation and Indoor Air - Radlab
ERCL01	Environmental & Radiation Chemistry, PHL
ERHD99	Fallout and Reactors Section, Ottawa, Canada – WATER ONLY
ERMI01	RMI Environmental Services
FERM01	FERMCO
GENE01	General Engineering Laboratories
GROW01	Fruit Growers Laboratory
HWRL01	Lawrence Livermore National Laboratory
IBTN99	Instituto Boliviana De Ciencia y Technologia Nuclear, La Paz, Bolivia
IDGR01	Internal Dosimetry Group-Rad. Lab. – WATER ONLY
LAWR02	University of California-LLNL
LEPD99	National Institute for Physics and Nuclear Engineering
LOCK01	Lockheed Analytical Chemistry – ICPP
LOCK03	Radiation Measurements Laboratory
LPTO99	SPA Typhoon, Obninsk, Russia
MART01	Lockheed Martin Utility Services
MART02	Lockheed Martin Utility Services Inc.
MART03	Radioactive Materials Analysis Laboratory
MDPH01	MDPH-Radiation Control Program
MOUN01	Mountain States Analytical, Inc.
NARL01	National Air and Radiation Environmental Laboratory
NESI01	B&W NESI - Nuclear Environmental Laboratory
NFSI01	Nuclear Fuel Services, Inc.
NMLA01	Assaiggi Analytical Laboratories
NRCQ01	US Nuclear Regulatory Commission, Region I
NRLL99	National Radiation Laboratory, Christchurch, New Zealand
OBGL01	O'Brien & Gere Laboratories, Inc.
ORIS01	ORISE/ESSAP
OTLI01	Outreach Technologies Laboratory, Inc.
PRAP01	IT WPRAP Laboratory
QUAN01	Quanterra Incorporated
QUAN02	Quanterra Incorporated, Knoxville Laboratory

MAPEP-01-W9 Reporting Participants (cont.)

Lab Code	Laboratory Name
QUAN03	Quanterra Environmental Services
RECC01	Environmental Chemical Corp.
ROCK01	Kaiser-Hill Co., Inc.
RSAL01	RSA Laboratories
RSIR99	Instituto de Radioprotecao e Dosimetria, Rio de Janeiro
SAVA01	Savannah River Technology Center/ ADS.
SCAL01	Sanford Cohen and Associates
SNEC01	Saxton Nuclear Experimental Corp.
SNLP01	Sandia National Laboratory ER Project
SOUT01	Southwest Research Institute
SWOL01	Southwest Laboratory of Oklahoma
TELE01	Teledyne Brown Engineering - Environmental Services
TELE02	Teledyne Isotopes Midwest Lab
TMAE01	Thermo Nutech
TMAO01	Thermo Nutech
TMAR01	Thermo Nutech
TNUT01	Thermo-Nutech
UPVL99	Universidad Politecnica de Valencia, Valencia, Spain
WEST01	R.F. Weston
WEST03	Waste Sampling and Characterization Facility
WEST04	Westinghouse Electric Corporation
WRRI99	Water Resources Research Centre, Budapest, Hungary-WATER ONLY
YAEC01	Yankee Atomic Electric Company

MAPEP-01-W9 Non-Reporting Participants

Lab Code	Laboratory Name
AK2501	Lockheed Martin Energy Systems, K-25 Site, ASO
BIOL99	Bedford Institute of Oceanography, Dartmouth, Nova Scotia
CNEA99	Comision Nacional de Energia Atomica, Asuncion, Paraguay-SOIL ONLY
EMBW01	B&W Of Ohio, Inc.
HISL99	Hydrometeorological Institute of Slovenia, Ljubljana, Slovenia
IPEN99	Instituto Peruano de Energia Nuclear, Lima, Peru – SOIL ONLY
IEMA99	Analytical Ecotoxicology Severtzov Institute of Ecology, Russia
LAWR01	Lawrence Berkeley Laboratory

Changes in Laboratory Status

Lab Code	Laboratory Name
ACCU01	Accu-Labs Research, Inc. – Closed April 2 nd
DATA01	Apparent voluntary separation from program missed reporting 3 successive studies
NMTL01	Nuclear Materials Technology, Los Alamos National Laboratory All sample distributions on hold until further notice
NRCQ02	U.S. NRC, Region 3 – Laboratory closed

Other MAPEP Participants

Lab Code	Laboratory Name
IHPH99	Institute of Hygiene and Public Health, Bucuresti, Romania
INST99	Pakistan Institute of Nuclear Science
IPHT99	BANNED by Dept. of Commerce – Export Administration Regulations
RCCI99	Inst. Of Public Health Timisoara - NEW Bhabha Atomic Research Centre, India
UINP99	BANNED by Dept. of Commerce- Export Administration Regulations University of Istanbul/Nuclear Physics, Istanbul, Turkey – SOIL ONLY

APPENDIX

B

Analytical Data

Mixed Analyte Performance Evaluation Program

Statistical Summary

Sample ID: MAPEP-01-W9

Analyte	T(1)	A(2)	Grand Mean	Std. Dev.	Reference Value	Analyte Text	Acceptance Limits	Units
Antimony	37	37	1.50	0.09	1.53		1.07 - 1.99	(mg/L)
Arsenic	36	35	0.24	0.02	0.238		0.17 - 0.31	(mg/L)
Barium	37	37	2.86	0.13	2.86		2.00 - 3.72	(mg/L)
Beryllium	18	18				False Positive Test		(mg/L)
Cadmium	39	38	0.19	0.01	0.191		0.13 - 0.25	(mg/L)
Chromium	38	37	0.38	0.02	0.382		0.27 - 0.50	(mg/L)
Copper	38	38	4.65	0.22	4.77		3.34 - 6.20	(mg/L)
Lead	38	36	0.47	0.02	0.477		0.33 - 0.62	(mg/L)
Nickel	37	37	0.75	0.05	0.763		0.53 - 0.99	(mg/L)
Selenium	37	37	0.74	0.05	0.763		0.53 - 0.99	(mg/L)
Silver	21	21				False Positive Test		(mg/L)
Thallium	35	34	1.14	0.07	1.14		0.80 - 1.48	(mg/L)
Uranium-Total	6	6	0.63	0.06	0.628		0.44 - 0.82	(mg/L)
Uranium-235	1	1			0.0012		0.00 - 0.00	(mg/L)
Uranium-238	1	1			0.627		0.44 - 0.82	(mg/L)
Vanadium	36	36	0.71	0.04	0.716		0.50 - 0.93	(mg/L)
Zinc	36	35	0.28	0.02	0.314		0.22 - 0.41	(mg/L)
Americium-241	35	34	1.17	0.10	1.19		0.83 - 1.55	(Bq/L)
Cesium-134	53	52	26.05	1.80	28.5		19.95 - 37.05	(Bq/L)
Cesium-137	54	53	275.29	15.93	286		200.20 - 371.80	(Bq/L)
Cobalt-57	52	50	138.96	9.85	143		100.10 - 185.90	(Bq/L)
Cobalt-60	54	53	143.38	6.60	141		98.70 - 183.30	(Bq/L)
Iron-55	8	3	8.75	0.37	9.2		6.44 - 11.96	(Bq/L)
Manganese-54	53	51	251.59	13.94	246		172.20 - 319.80	(Bq/L)
Nickel-63	16	14	91.87	9.82	88.3		61.81 - 114.79	(Bq/L)
Plutonium-238	35	18				False Positive Test		
Plutonium-239/240	39	36	2.81	0.19	2.99		2.09 - 3.89	(Bq/L)
Strontium-90	34	29	4.80	0.54	4.8		3.36 - 6.24	(Bq/L)
Uranium-234/233	38	36	1.01	0.10	0.98		0.69 - 1.27	(Bq/L)
Uranium-238	40	39	7.69	0.64	7.8		5.46 - 10.14	(Bq/L)
Zinc-65	52	48	71.70	4.08	67.3		47.11 - 87.49	(Bq/L)
1,3-Dichlorobenzene	23	22	41.44	8.53	41.4		15.85 - 67.03	(ug/L)
Hexachloroethane	23	23	75.94	19.42	75.9		17.71 - 134.18	(ug/L)

Note:

Outliers are excluded from the statistical summary.

Outliers are defied as laboratory data with a bias greater than 30 percent.

(1) T = Total Number of Laboratories Reporting Analyte.

(2) A = Number of Laboratories with 'Acceptable' Performance.

1. For organic components with absolute value of Z-score < 3

2. Acceptance range minimum labeled as "DL" means from the Detection Limit to the upper range.

Analyte	T(1)	A(2)	Grand Mean	Std. Dev.	Reference Value	Analyte Text	Acceptance Limits	Units
Nitrobenzene	22	22	49.44	8.46	49.4		24.07 - 74.81	(ug/L)
2,4-Dimethylphenol	23	23	72.14	16.61	72.1		22.33 - 121.96	(ug/L)
2,4-Dichlorophenol	23	23	61.41	12.19	61.4		24.84 - 97.98	(ug/L)
1,2,4-Trichlorobenzene	23	22	48.00	8.09	48		23.74 - 72.26	(ug/L)
Naphthalene	23	22	38.06	6.56	38.1		18.38 - 57.75	(ug/L)
Hexachlorobutadiene	22	22	32.18	8.45	32.2		6.83 - 57.53	(ug/L)
2,6-Dichlorophenol	12	12	37.27	7.16	37.3		15.80 - 58.74	(ug/L)
2,6-Dinitrotoluene	23	23	46.19	6.61	46.2		26.37 - 66.02	(ug/L)
2,4-Dinitrotoluene	23	23	86.45	16.95	86.4		35.61 - 137.29	(ug/L)
Diethylphthalate	17	16	39.99	7.85	40		16.45 - 63.53	(ug/L)
Hexachlorobenzene	23	23	39.32	15.53	39.3		QL - 85.90	(ug/L)
Anthracene	24	24	42.61	13.90	42.6		0.91 - 84.30	(ug/L)
Pentachlorobenzene	11	11	47.66	11.91	47.7		11.94 - 83.38	(ug/L)
Fluoranthene	24	24	41.88	13.18	41.9		2.35 - 81.40	(ug/L)
Pyrene	24	22	49.51	16.68	49.5		QL - 99.54	(ug/L)
Benzo(a)anthracene	23	23	36.59	11.79	36.6		1.23 - 71.95	(ug/L)

Note:

Outliers are excluded from the statistical summary.

Outliers are defied as laboratory data with a bias greater than 30 percent.

(1) T = Total Number of Laboratories Reporting Analyte.

(2) A = Number of Laboratories with 'Acceptable' Performance.

1. For organic components with absolute value of Z-score < 3

2. Acceptance range minimum labeled as "DL" means from the Detection Limit to the upper range.

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Alabama Department of Environmental Management
ADEM01 Central Laboratory
 Montgomery AL 36190

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Actinium-228	0						1		(Bq/L)
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	25.8	28.5	A		-9.5	19.95 - 37.05	.9		(Bq/L)
Cesium-137	282	286	A		-1.4	200.20 - 371.80	8.0	L	(Bq/L)
Cobalt-57	146	143	A		2.1	100.10 - 185.90	3.3	L	(Bq/L)
Cobalt-60	148	141	A		5.0	98.70 - 183.30	3.1	L	(Bq/L)
Manganese-54	265	246	A		7.7	172.20 - 319.80	6.8	L	(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	6.02	4.8	W		25.4	3.36 - 6.24	.03	L	(Bq/L)
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	265	67.3	N		293.8	47.11 - 87.49	6.8	L	(Bq/L)

- Flags:** A = Result acceptable Bias <= 20%
 W = Result acceptable with warning 20% < Bias <= 30%
 N = Result not acceptable Bias > 30%
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Alabama Department of Environmental Management
ADEM01 Central Laboratory
 Montgomery AL 36190

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Argonne National Laboratory/Analytical Chemistry Lab.
ANLA01 9700 S. Cass Avenue

Argonne IL 60439

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.446	1.53	A		-5.5	1.07 - 1.99	0.01	L	(mg/L)
Arsenic	0.243	0.238	A		2.1	0.17 - 0.31	0.02		(mg/L)
Barium	2.722	2.86	A		-4.8	2.00 - 3.72	0.27		(mg/L)
Beryllium	<0.01		A						(mg/L)
Cadmium	0.181	0.191	A		-5.2	0.13 - 0.25	0.02		(mg/L)
Chromium	0.365	0.382	A		-4.4	0.27 - 0.50	0.04		(mg/L)
Copper	4.426	4.77	A		-7.2	3.34 - 6.20	0.44		(mg/L)
Lead	0.447	0.477	A		-6.3	0.33 - 0.62	0.04		(mg/L)
Nickel	0.680	0.763	A		-10.9	0.53 - 0.99	0.07		(mg/L)
Selenium	0.713	0.763	A		-6.6	0.53 - 0.99	0.07		(mg/L)
Silver	<0.02		A						(mg/L)
Thallium	1.091	1.14	A		-4.3	0.80 - 1.48	0.11		(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.692	0.716	A		-3.4	0.50 - 0.93	0.07		(mg/L)
Zinc	0.285	0.314	A		-9.2	0.22 - 0.41	0.03		(mg/L)
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	28	28.5	A		-1.8	19.95 - 37.05	4		(Bq/L)
Cesium-137	249	286	A		-12.9	200.20 - 371.80	2	L	(Bq/L)
Cobalt-57	118	143	A		-17.5	100.10 - 185.90	7		(Bq/L)
Cobalt-60	139	141	A		-1.4	98.70 - 183.30	3	L	(Bq/L)
Manganese-54	233	246	A		-5.3	172.20 - 319.80	2	L	(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	4.2	4.8	A		-12.5	3.36 - 6.24	0.7		(Bq/L)
Uranium-234/233	0.96	0.98	A		-2.0	0.69 - 1.27	0.05		(Bq/L)
Uranium-238	7.2	7.8	A		-7.7	5.46 - 10.14	0.2	L	(Bq/L)
Zinc-65	70.9	67.3	A		5.3	47.11 - 87.49	2.6		(Bq/L)

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Argonne National Laboratory/Analytical Chemistry Lab.
ANLA01 9700 S. Cass Avenue

Argonne IL 60439

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	45.7	41.4	A		0.5	15.85 - 67.03	(ug/L)
Hexachloroethane	83.0	75.9	A		0.4	17.71 - 134.18	(ug/L)
Nitrobenzene	55.3	49.4	A		0.7	24.07 - 74.81	(ug/L)
2,4-Dimethylphenol	67.5	72.1	A		-0.3	22.33 - 121.96	(ug/L)
2,4-Dichlorophenol	64.5	61.4	A		0.3	24.84 - 97.98	(ug/L)
1,2,4-Trichlorobenzene	50.7	48	A		0.3	23.74 - 72.26	(ug/L)
Naphthalene	33.3	38.1	A		-0.7	18.38 - 57.75	(ug/L)
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	41.9	37.3	A		0.6	15.80 - 58.74	(ug/L)
2,6-Dinitrotoluene	56.2	46.2	A		1.5	26.37 - 66.02	(ug/L)
2,4-Dinitrotoluene	83.0	86.4	A		-0.2	35.61 - 137.29	(ug/L)
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	56.9	39.3	A		1.1	QL - 85.90	(ug/L)
Anthracene	61.6	42.6	A		1.4	0.91 - 84.30	(ug/L)
Pentachlorobenzene	59.8	47.7	A		1.0	11.94 - 83.38	(ug/L)
Fluoranthene	61.6	41.9	A		1.5	2.35 - 81.40	(ug/L)
Pyrene	55.4	49.5	A		0.4	QL - 99.54	(ug/L)
Benzo(a)anthracene	42.6	36.6	A		0.5	1.23 - 71.95	(ug/L)

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Paragon Analytics, Inc.
ANTE01 225 Commerce Drive
 Fort Collins CO 80524

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.46	1.53	A		-4.6	1.07 - 1.99			(mg/L)
Arsenic	0.231	0.238	A		-2.9	0.17 - 0.31			(mg/L)
Barium	2.79	2.86	A		-2.4	2.00 - 3.72			(mg/L)
Cadmium	0.181	0.191	A		-5.2	0.13 - 0.25			(mg/L)
Chromium	0.367	0.382	A		-3.9	0.27 - 0.50			(mg/L)
Copper	4.45	4.77	A		-6.7	3.34 - 6.20			(mg/L)
Lead	0.453	0.477	A		-5.0	0.33 - 0.62			(mg/L)
Nickel	0.727	0.763	A		-4.7	0.53 - 0.99			(mg/L)
Selenium	0.744	0.763	A		-2.5	0.53 - 0.99			(mg/L)
Thallium	1.12	1.14	A		-1.8	0.80 - 1.48			(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.699	0.716	A		-2.4	0.50 - 0.93			(mg/L)
Zinc	0.285	0.314	A		-9.2	0.22 - 0.41			(mg/L)
Americium-241	1.09	1.19	A		-8.4	0.83 - 1.55	0.0814		(Bq/L)
Cesium-134	26.1	28.5	A		-8.4	19.95 - 37.05	2.17		(Bq/L)
Cesium-137	270	286	A		-5.6	200.20 - 371.80	22.3		(Bq/L)
Cobalt-57	142	143	A		-0.7	100.10 - 185.90	11.7		(Bq/L)
Cobalt-60	141	141	A		0.0	98.70 - 183.30	11.6		(Bq/L)
Manganese-54	246	246	A		0.0	172.20 - 319.80	20.3		(Bq/L)
Nickel-63	83.7	88.3	A		-5.2	61.81 - 114.79	10.6		(Bq/L)
Plutonium-238	0.0187		N	False Positive			0.00460		(Bq/L)
Plutonium-239/240	2.85	2.99	A		-4.7	2.09 - 3.89	0.183		(Bq/L)
Strontium-90	4.62	4.8	A		-3.8	3.36 - 6.24	0.418		(Bq/L)
Uranium-234/233	1.05	0.98	A		7.1	0.69 - 1.27	0.0749		(Bq/L)
Uranium-238	7.82	7.8	A		0.3	5.46 - 10.14	0.489		(Bq/L)
Zinc-65	69.0	67.3	A		2.5	47.11 - 87.49	5.74		(Bq/L)

Flags: A = Result acceptable Bias <= 20%
 W = Result acceptable with warning 20% < Bias <= 30%
 N = Result not acceptable Bias > 30%
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Paragon Analytics, Inc.
ANTE01 225 Commerce Drive
 Fort Collins CO 80524

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	44.0	41.4	A		0.3	15.85 - 67.03	(ug/L)
Hexachloroethane	82.7	75.9	A		0.3	17.71 - 134.18	(ug/L)
Nitrobenzene	51.2	49.4	A		0.2	24.07 - 74.81	(ug/L)
2,4-Dimethylphenol	79.1	72.1	A		0.4	22.33 - 121.96	(ug/L)
2,4-Dichlorophenol	60.1	61.4	A		-0.1	24.84 - 97.98	(ug/L)
1,2,4-Trichlorobenzene	51.0	48	A		0.4	23.74 - 72.26	(ug/L)
Naphthalene	42.1	38.1	A		0.6	18.38 - 57.75	(ug/L)
Hexachlorobutadiene	35.3	32.2	A		0.4	6.83 - 57.53	(ug/L)
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	56.8	46.2	A		1.6	26.37 - 66.02	(ug/L)
2,4-Dinitrotoluene	86.3	86.4	A		0.0	35.61 - 137.29	(ug/L)
Diethylphthalate	45.1	40	A		0.7	16.45 - 63.53	(ug/L)
Hexachlorobenzene	46.1	39.3	A		0.4	QL - 85.90	(ug/L)
Anthracene	48.0	42.6	A		0.4	0.91 - 84.30	(ug/L)
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	49.1	41.9	A		0.5	2.35 - 81.40	(ug/L)
Pyrene	49.5	49.5	A		0.0	QL - 99.54	(ug/L)
Benzo(a)anthracene	39.1	36.6	A		0.2	1.23 - 71.95	(ug/L)

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

ARGO01 Argonne National Laboratory West
EBRII-Site

Idaho Falls ID 83403

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.52	1.53	A		-0.7	1.07 - 1.99	0.15		(mg/L)
Arsenic	0.24	0.238	A		0.8	0.17 - 0.31	0.024		(mg/L)
Barium	3.05	2.86	A		6.6	2.00 - 3.72	0.31		(mg/L)
Cadmium	0.19	0.191	A		-0.5	0.13 - 0.25	0.02		(mg/L)
Chromium	0.40	0.382	A		4.7	0.27 - 0.50	0.04		(mg/L)
Copper	NR	4.77				3.34 - 6.20			
Lead	0.49	0.477	A		2.7	0.33 - 0.62	0.05		(mg/L)
Nickel	0.78	0.763	A		2.2	0.53 - 0.99	0.08		(mg/L)
Selenium	0.73	0.763	A		-4.3	0.53 - 0.99	0.07		(mg/L)
Thallium	1.14	1.14	A		0.0	0.80 - 1.48	0.11		(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	28	28.5	A		-1.8	19.95 - 37.05	3.6		(Bq/L)
Cesium-137	279	286	A		-2.4	200.20 - 371.80	28		(Bq/L)
Cobalt-57	139	143	A		-2.8	100.10 - 185.90	14		(Bq/L)
Cobalt-60	143	141	A		1.4	98.70 - 183.30	14		(Bq/L)
Manganese-54	246	246	A		0.0	172.20 - 319.80	25		(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	71	67.3	A		5.5	47.11 - 87.49	13		(Bq/L)

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

ARGO01 Argonne National Laboratory West
EBRII-Site

Idaho Falls ID 83403

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

LMES ACO Y-12 Building 9995 Laboratory
AY1201 Y12, Building 9995, Rm 142

Oak Ridge TN 37831

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.52	1.53	A		-0.7	1.07 - 1.99			(mg/L)
Arsenic	0.257	0.238	A		8.0	0.17 - 0.31			(mg/L)
Barium	2.92	2.86	A		2.1	2.00 - 3.72			(mg/L)
Beryllium	<0.0005		A						(mg/L)
Cadmium	0.203	0.191	A		6.3	0.13 - 0.25			(mg/L)
Chromium	0.407	0.382	A		6.5	0.27 - 0.50			(mg/L)
Copper	4.69	4.77	A		-1.7	3.34 - 6.20			(mg/L)
Lead	0.474	0.477	A		-0.6	0.33 - 0.62			(mg/L)
Nickel	0.739	0.763	A		-3.1	0.53 - 0.99			(mg/L)
Selenium	0.752	0.763	A		-1.4	0.53 - 0.99			(mg/L)
Silver	<0.02		A						(mg/L)
Thallium	1.13	1.14	A		-0.9	0.80 - 1.48			(mg/L)
Uranium-Total	0.614	0.628	A		-2.2	0.44 - 0.82			(mg/L)
Uranium-235	0.00123	0.0012	A		2.5	0.00 - 0.00			(mg/L)
Uranium-238	0.613	0.627	A		-2.2	0.44 - 0.82			(mg/L)
Vanadium	0.709	0.716	A		-1.0	0.50 - 0.93			(mg/L)
Zinc	0.276	0.314	A		-12.1	0.22 - 0.41			(mg/L)
Americium-241	1.02	1.19	A		-14.3	0.83 - 1.55	0.10		(Bq/L)
Cesium-134	26	28.5	A		-8.8	19.95 - 37.05	1.7		(Bq/L)
Cesium-137	276	286	A		-3.5	200.20 - 371.80	28		(Bq/L)
Cobalt-57	141	143	A		-1.4	100.10 - 185.90	10		(Bq/L)
Cobalt-60	143	141	A		1.4	98.70 - 183.30	10		(Bq/L)
Manganese-54	256	246	A		4.1	172.20 - 319.80	26		(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-238	0.018		N	False Positive			0.0052		(Bq/L)
Plutonium-239/240	2.73	2.99	A		-8.7	2.09 - 3.89	0.27		(Bq/L)
Strontium-90	4.28	4.8	A		-10.8	3.36 - 6.24	0.21		(Bq/L)
Uranium-234/233	0.976	0.98	A		-0.4	0.69 - 1.27	0.11		(Bq/L)
Uranium-238	7.31	7.8	A		-6.3	5.46 - 10.14	0.77		(Bq/L)
Zinc-65	73	67.3	A		8.5	47.11 - 87.49	7.7		(Bq/L)

- Flags:**
- A = Result acceptable Bias <= 20%
 - W = Result acceptable with warning 20% < Bias <= 30%
 - N = Result not acceptable Bias > 30%
 - L = Uncertainty potentially too low (for information purposes only)
 - H = Uncertainty potentially too high (for information purposes only)
 - QL = Detection Limit
 - RW = Report Warning
 - NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

LMES ACO Y-12 Building 9995 Laboratory
AY1201 Y12, Building 9995, Rm 142

Oak Ridge TN 37831

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
Analine	<10						(ug/L)
Phenol	<10						(ug/L)
2-Chlorophenol	<10						(ug/L)
1,3-Dichlorobenzene	47	41.4	A		0.7	15.85 - 67.03	(ug/L)
1,4-Dichlorobenzene	<10						(ug/L)
Benzyl Alcohol	<10						(ug/L)
1,2-Dichlorobenzene	<10						(ug/L)
Hexachloroethane	110	75.9	A		1.8	17.71 - 134.18	(ug/L)
Nitrobenzene	60	49.4	A		1.2	24.07 - 74.81	(ug/L)
Isophorone	<10						(ug/L)
2-Nitrophenol	<10						(ug/L)
2,4-Dimethylphenol	91	72.1	A		1.1	22.33 - 121.96	(ug/L)
2,4-Dichlorophenol	41	61.4	A		-1.7	24.84 - 97.98	(ug/L)
1,2,4-Trichlorobenzene	60	48	A		1.5	23.74 - 72.26	(ug/L)
Naphthalene	44	38.1	A		0.9	18.38 - 57.75	(ug/L)
Hexachlorobutadiene	38	32.2	A		0.7	6.83 - 57.53	(ug/L)
4-Chloro-3-methylphenol	<20						(ug/L)
2-Methylnaphthalene	<10						(ug/L)
2-Methylphenol	<10						(ug/L)
Hexachlorocyclopentadiene	<10						(ug/L)
3 Methyl & 4-Methylphenol	<20						(ug/L)
2,4,6-Trichlorophenol	<10						(ug/L)
2,6-Dichlorophenol	47	37.3	A		1.4	15.80 - 58.74	(ug/L)
o-Toluidine	<10						(ug/L)
2-Chloronaphthalene	<10						(ug/L)
2-Nitroanaline	<10						(ug/L)
Dimethylphthalate	<10						(ug/L)
Acenaphthylene	<10						(ug/L)
2,6-Dinitrotoluene	43	46.2	A		-0.5	26.37 - 66.02	(ug/L)
3-Nitroanaline	<10						(ug/L)
Acenaphthene	<10						(ug/L)
2,4-Dinitrotoluene	66	86.4	A		-1.2	35.61 - 137.29	(ug/L)
2,4-Dinitrophenol	<50						(ug/L)
4-Chloroanaline	<10						(ug/L)
Dibenzofuran	<10						(ug/L)
4-Nitrophenol	<20						(ug/L)
2-Naphthylamine	<10						(ug/L)
1,4-Naphthoquinone	<10						(ug/L)
Fluorene	<10						(ug/L)
Diethylphthalate	12	40	N		-3.6	16.45 - 63.53	(ug/L)
4,6-Dinitro-2-methylpheno	<20						(ug/L)
1,2,4,5-Tetrachlorobenzene	<10						(ug/L)
2,4,5-Trichlorophenol	<10						(ug/L)
Hexachlorobenzene	63	39.3	A		1.5	QL - 85.90	(ug/L)
Pentachlorophenol	<10						(ug/L)
4-Nitroanaline	<10						(ug/L)
Phenanthrene	<10						(ug/L)
Anthracene	41	42.6	A		-0.1	0.91 - 84.30	(ug/L)
1,4-Dinitrobenzene	<10						(ug/L)
1,3-Dinitrobenzene	<10						(ug/L)
Pentachlorobenzene	53	47.7	A		0.4	11.94 - 83.38	(ug/L)

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

LMES ACO Y-12 Building 9995 Laboratory
AYI201 Y12, Building 9995, Rm 142

Oak Ridge TN 37831

Pentachloronitrobenzene	<10				(ug/L)
Di-n-butylphthalate	<10				(ug/L)
2,3,4,6-Tetrachlorophenol	<10				(ug/L)
Fluoranthene	53	41.9 A	0.8	2.35 - 81.40	(ug/L)
Pyrene	120	49.5 N	4.2	QL - 99.54	(ug/L)
Dinoseb	<10				(ug/L)
Butylbenzylphthalate	<10				(ug/L)
Benzo(a)anthracene	49	36.6 A	1.1	1.23 - 71.95	(ug/L)
Chrysene	<10				(ug/L)
Bis(2-ethylhexyl)phthalat	<10				(ug/L)
Di-n-octylphthalate	<10				(ug/L)
Benzo(b)fluoranthene	<10				(ug/L)
Benzo(k)fluoranthene	<10				(ug/L)
Benzo(a)pyrene	<10				(ug/L)
Indeno(1,2,3-c,d)pyrene	<10				(ug/L)
Dibenzo(a,h)anthracene	<20				(ug/L)
Benzo(g,h,i)perylene	<10				(ug/L)

Flags: A = Result acceptable Z-score ≤ 2.0

W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$

N = Result not acceptable Z-score > 3.0

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Northeast Laboratory Services, Inc.
BNEL01 PO Box 788

Waterville ME 04903

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Aluminum	<0.01								(mg/L)
Antimony	1.43	1.53	A		-6.5	1.07 - 1.99			(mg/L)
Arsenic	0.250	0.238	A		5.0	0.17 - 0.31			(mg/L)
Barium	3.0	2.86	A		4.9	2.00 - 3.72			(mg/L)
Beryllium	<0.1		A						(mg/L)
Cadmium	0.192	0.191	A		0.5	0.13 - 0.25			(mg/L)
Chromium	0.380	0.382	A		-0.5	0.27 - 0.50			(mg/L)
Copper	4.50	4.77	A		-5.7	3.34 - 6.20			(mg/L)
Lead	0.478	0.477	A		0.2	0.33 - 0.62			(mg/L)
Nickel	0.766	0.763	A		0.4	0.53 - 0.99			(mg/L)
Selenium	0.780	0.763	A		2.2	0.53 - 0.99			(mg/L)
Silver	<0.05		A						(mg/L)
Thallium	1.17	1.14	A		2.6	0.80 - 1.48			(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.720	0.716	A		0.6	0.50 - 0.93			(mg/L)
Zinc	0.305	0.314	A		-2.9	0.22 - 0.41			(mg/L)
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	NR	28.5				19.95 - 37.05			
Cesium-137	NR	286				200.20 - 371.80			
Cobalt-57	NR	143				100.10 - 185.90			
Cobalt-60	NR	141				98.70 - 183.30			
Manganese-54	NR	246				172.20 - 319.80			
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	NR	67.3				47.11 - 87.49			

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Northeast Laboratory Services, Inc.
BNEL01 PO Box 788

Waterville ME 04903

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
Phenol	17.9		N	False Positive			(ug/L)
2-Chlorophenol	42.6		N	False Positive			(ug/L)
1,3-Dichlorobenzene	35.1	41.4	A		-0.7	15.85 - 67.03	(ug/L)
1,4-Dichlorobenzene	39.3		N	False Positive			(ug/L)
Hexachloroethane	85.2	75.9	A		0.5	17.71 - 134.18	(ug/L)
Nitrobenzene	44.0	49.4	A		-0.6	24.07 - 74.81	(ug/L)
2,4-Dimethylphenol	75.7	72.1	A		0.2	22.33 - 121.96	(ug/L)
2,4-Dichlorophenol	70.2	61.4	A		0.7	24.84 - 97.98	(ug/L)
1,2,4-Trichlorobenzene	84.0	48	N		4.5	23.74 - 72.26	(ug/L)
Naphthalene	40.0	38.1	A		0.3	18.38 - 57.75	(ug/L)
Hexachlorobutadiene	39.7	32.2	A		0.9	6.83 - 57.53	(ug/L)
4-Chloro-3-methylphenol	48.5		N	False Positive			(ug/L)
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	48.0	46.2	A		0.3	26.37 - 66.02	(ug/L)
Acenaphthene	54.5		N	False Positive			(ug/L)
2,4-Dinitrotoluene	121	86.4	W		2.0	35.61 - 137.29	(ug/L)
4-Nitrophenol	17.9		N	False Positive			(ug/L)
Diethylphthalate	44.1	40	A		0.5	16.45 - 63.53	(ug/L)
Hexachlorobenzene	59.4	39.3	A		1.3	QL - 85.90	(ug/L)
Pentachlorophenol	30.9		N	False Positive			(ug/L)
Phenanthrene	47.1		N	False Positive			(ug/L)
Anthracene	54.7	42.6	A		0.9	0.91 - 84.30	(ug/L)
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	55.1	41.9	A		1.0	2.35 - 81.40	(ug/L)
Pyrene	104	49.5	N		3.3	QL - 99.54	(ug/L)
Benzo(a)anthracene	46.9	36.6	A		0.9	1.23 - 71.95	(ug/L)

Flags: A = Result acceptable Z-score <=2.0)

W = Result acceptable with warning 2.0 < Z-score <=3.0)

N = Result not acceptable Z-score > 3.0)

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Comisión Chilena de Energía Nuclear-LAAN
CCEN99 AMUNATEGUI 95

SANTIAGO SANTIA 65006

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.47	1.53	A		-3.9	1.07 - 1.99	0.05		(mg/L)
Arsenic	0.233	0.238	A		-2.1	0.17 - 0.31	0.014		(mg/L)
Barium	NR	2.86				2.00 - 3.72			
Cadmium	0.146	0.191	W		-23.6	0.13 - 0.25	0.024		(mg/L)
Chromium	0.377	0.382	A		-1.3	0.27 - 0.50	0.013		(mg/L)
Copper	5.18	4.77	A		8.6	3.34 - 6.20	0.46		(mg/L)
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	0.738	0.763	A		-3.3	0.53 - 0.99	0.025		(mg/L)
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.675	0.716	A		-5.7	0.50 - 0.93	0.041		(mg/L)
Zinc	0.267	0.314	A		-15.0	0.22 - 0.41	0.013		(mg/L)
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	NR	28.5				19.95 - 37.05			
Cesium-137	NR	286				200.20 - 371.80			
Cobalt-57	NR	143				100.10 - 185.90			
Cobalt-60	NR	141				98.70 - 183.30			
Manganese-54	NR	246				172.20 - 319.80			
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	NR	67.3				47.11 - 87.49			

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Comisión Chilena de Energía Nuclear-LAAN
CCEN99 AMUNATEGUI 95

SANTIAGO SANTIA 65006

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags:

- A = Result acceptable Z-score ≤ 2.0
- W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
- N = Result not acceptable Z-score > 3.0
- L = Uncertainty potentially too low (for information purposes only)
- H = Uncertainty potentially too high (for information purposes only)
- QL = Detection Limit
- RW = Report Warning
- NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

California Department of Health Services
CDHS01 Sanitation & Radiation Lab.

Berkeley CA 94704

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.46	1.53	A		-4.6	1.07 - 1.99			(mg/L)
Arsenic	0.244	0.238	A		2.5	0.17 - 0.31			(mg/L)
Barium	2.80	2.86	A		-2.1	2.00 - 3.72			(mg/L)
Beryllium	<0.10		A						(mg/L)
Cadmium	0.184	0.191	A		-3.7	0.13 - 0.25			(mg/L)
Chromium	0.311	0.382	A		-18.6	0.27 - 0.50			(mg/L)
Copper	4.68	4.77	A		-1.9	3.34 - 6.20			(mg/L)
Lead	0.455	0.477	A		-4.6	0.33 - 0.62			(mg/L)
Nickel	0.629	0.763	A		-17.6	0.53 - 0.99			(mg/L)
Selenium	0.732	0.763	A		-4.1	0.53 - 0.99			(mg/L)
Silver	<0.05		A						(mg/L)
Thallium	1.08	1.14	A		-5.3	0.80 - 1.48			(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.605	0.716	A		-15.5	0.50 - 0.93			(mg/L)
Zinc	0.235	0.314	W		-25.2	0.22 - 0.41			(mg/L)
Americium-241	1.20	1.19	A		0.8	0.83 - 1.55	0.06		(Bq/L)
Cesium-134	28.08	28.5	A		-1.5	19.95 - 37.05	0.51	L	(Bq/L)
Cesium-137	262.71	286	A		-8.1	200.20 - 371.80	0.92	L	(Bq/L)
Cobalt-57	133.93	143	A		-6.3	100.10 - 185.90	0.48	L	(Bq/L)
Cobalt-60	140.59	141	A		-0.3	98.70 - 183.30	0.78	L	(Bq/L)
Iron-55	3.87	9.2	N		-57.9	6.44 - 11.96	0.86		(Bq/L)
Manganese-54	243.94	246	A		-0.8	172.20 - 319.80	0.99	L	(Bq/L)
Nickel-63	98.05	88.3	A		11.0	61.81 - 114.79	0.91	L	(Bq/L)
Plutonium-238	0.015		A				0.007		(Bq/L)
Plutonium-239/240	2.98	2.99	A		-0.3	2.09 - 3.89	0.13		(Bq/L)
Strontium-90	5.02	4.8	A		4.6	3.36 - 6.24	0.29		(Bq/L)
Uranium-234/233	1.01	0.98	A		3.1	0.69 - 1.27	0.05		(Bq/L)
Uranium-238	7.33	7.8	A		-6.0	5.46 - 10.14	0.28		(Bq/L)
Zinc-65	69.90	67.3	A		3.9	47.11 - 87.49	1.29	L	(Bq/L)

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

California Department of Health Services
CDHS01 Sanitation & Radiation Lab.

Berkeley CA 94704

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	32.0	41.4	A		-1.1	15.85 - 67.03	(ug/L)
Hexachloroethane	54.6	75.9	A		-1.1	17.71 - 134.18	(ug/L)
Nitrobenzene	34.8	49.4	A		-1.7	24.07 - 74.81	(ug/L)
2,4-Dimethylphenol	57.1	72.1	A		-0.9	22.33 - 121.96	(ug/L)
2,4-Dichlorophenol	36.0	61.4	W		-2.1	24.84 - 97.98	(ug/L)
1,2,4-Trichlorobenzene	38.8	48	A		-1.1	23.74 - 72.26	(ug/L)
Naphthalene	28.8	38.1	A		-1.4	18.38 - 57.75	(ug/L)
Hexachlorobutadiene	24.2	32.2	A		-0.9	6.83 - 57.53	(ug/L)
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	27.6	46.2	W		-2.8	26.37 - 66.02	(ug/L)
2,4-Dinitrotoluene	52.0	86.4	W		-2.0	35.61 - 137.29	(ug/L)
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	28.3	39.3	A		-0.7	QL - 85.90	(ug/L)
Anthracene	31.0	42.6	A		-0.8	0.91 - 84.30	(ug/L)
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	35.7	41.9	A		-0.5	2.35 - 81.40	(ug/L)
Pyrene	41.4	49.5	A		-0.5	QL - 99.54	(ug/L)
Benzo(a)anthracene	22.7	36.6	A		-1.2	1.23 - 71.95	(ug/L)

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Comision Ecuatoriana de Energia Atomica/U.Q.A.

CEEA99

JUAN LARREA 534 Y RIOFRIO

QUITO

Pichinch 1

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	2.67	2.86	A		-6.6	2.00 - 3.72	0.08	L	(mg/L)
Cadmium	0.17	0.191	A		-11.0	0.13 - 0.25	0.01		(mg/L)
Chromium	0.20	0.382	N		-47.6	0.27 - 0.50	0.01		(mg/L)
Copper	4.20	4.77	A		-11.9	3.34 - 6.20	0.13		(mg/L)
Lead	0.47	0.477	A		-1.5	0.33 - 0.62	0.03		(mg/L)
Nickel	0.79	0.763	A		3.5	0.53 - 0.99	0.07		(mg/L)
Selenium	0.723	0.763	A		-5.2	0.53 - 0.99	0.148	H	(mg/L)
Silver	< 0.03		A						(mg/L)
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.82	0.716	A		14.5	0.50 - 0.93	0.17	H	(mg/L)
Zinc	0.26	0.314	A		-17.2	0.22 - 0.41	0.01		(mg/L)
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	NR	28.5				19.95 - 37.05			
Cesium-137	NR	286				200.20 - 371.80			
Cobalt-57	NR	143				100.10 - 185.90			
Cobalt-60	NR	141				98.70 - 183.30			
Manganese-54	NR	246				172.20 - 319.80			
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	NR	67.3				47.11 - 87.49			

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Comision Ecuatoriana de Energia Atomica/U.Q.A.

CEEA99 JUAN LARREA 534 Y RIOFRIO

QUITO

Pichinch 1

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0

W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$

N = Result not acceptable Z-score > 3.0

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Lawrence Livermore National Laboratory - CES
CESL01
 7000 East Avenue
 Livermore CA 94550

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	1.13	1.19	A		-5.0	0.83 - 1.55	.0337	L	(Bq/L)
Cesium-134	22.9	28.5	A		-19.6	19.95 - 37.05	.98		(Bq/L)
Cesium-137	280.	286	A		-2.1	200.20 - 371.80	16.2		(Bq/L)
Cobalt-57	155.	143	A		8.4	100.10 - 185.90	8.85		(Bq/L)
Cobalt-60	151.	141	A		7.1	98.70 - 183.30	6.3		(Bq/L)
Manganese-54	264.	246	A		7.3	172.20 - 319.80	19.8		(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-238	.0168		N	False Positive			.00295		(Bq/L)
Plutonium-239/240	2.86	2.99	A		-4.3	2.09 - 3.89	.101		(Bq/L)
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	.853	0.98	A		-13.0	0.69 - 1.27	.0419		(Bq/L)
Uranium-238	6.97	7.8	A		-10.6	5.46 - 10.14	.277		(Bq/L)
Zinc-65	75.7	67.3	A		12.5	47.11 - 87.49	5.9		(Bq/L)

Flags: A = Result acceptable Bias <= 20%
 W = Result acceptable with warning 20% < Bias <= 30%
 N = Result not acceptable Bias > 30%
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Lawrence Livermore National Laboratory - CES
CESL01
 7000 East Avenue
 Livermore CA 94550

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

LOW BACKGROUND RADIOACTIVITY LABORATORY
CIRP99 China Institute for Radiation

Taiyuan Shanxi -

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	26.81	28.5	A		-5.9	19.95 - 37.05	2.00		(Bq/L)
Cesium-137	274.2	286	A		-4.1	200.20 - 371.80	17.6		(Bq/L)
Cobalt-57	143.6	143	A		0.4	100.10 - 185.90	9.3		(Bq/L)
Cobalt-60	144.0	141	A		2.1	98.70 - 183.30	9.5		(Bq/L)
Manganese-54	254.5	246	A		3.5	172.20 - 319.80	16.5		(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	67.42	67.3	A		0.2	47.11 - 87.49	5.14		(Bq/L)

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

LOW BACKGROUND RADIOACTIVITY LABORATORY
CIRP99 China Institute for Radiation

Taiyuan Shanxi -

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Enviro-Test Laboratories, LLC
CORE01 420 WEST 1ST STREET

CASPER WY 82601

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.39	1.53	A		-9.1	1.07 - 1.99			(mg/L)
Arsenic	0.23	0.238	A		-3.4	0.17 - 0.31			(mg/L)
Barium	2.76	2.86	A		-3.5	2.00 - 3.72			(mg/L)
Beryllium	<0.001		A						(mg/L)
Cadmium	0.187	0.191	A		-2.1	0.13 - 0.25			(mg/L)
Chromium	0.375	0.382	A		-1.8	0.27 - 0.50			(mg/L)
Copper	4.51	4.77	A		-5.5	3.34 - 6.20			(mg/L)
Lead	0.485	0.477	A		1.7	0.33 - 0.62			(mg/L)
Nickel	0.765	0.763	A		0.3	0.53 - 0.99			(mg/L)
Selenium	0.717	0.763	A		-6.0	0.53 - 0.99			(mg/L)
Silver	0.0009		A						(mg/L)
Thallium	1.16	1.14	A		1.8	0.80 - 1.48			(mg/L)
Uranium-Total	0.657	0.628	A		4.6	0.44 - 0.82			(mg/L)
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.706	0.716	A		-1.4	0.50 - 0.93			(mg/L)
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	1.22	1.19	A		2.5	0.83 - 1.55	0.10		(Bq/L)
Cesium-134	24.4	28.5	A		-14.4	19.95 - 37.05	0.33	L	(Bq/L)
Cesium-137	273	286	A		-4.5	200.20 - 371.80	0.85	L	(Bq/L)
Cobalt-57	140	143	A		-2.1	100.10 - 185.90	0.43	L	(Bq/L)
Cobalt-60	143	141	A		1.4	98.70 - 183.30	0.53	L	(Bq/L)
Iron-55	8.90	9.2	A		-3.3	6.44 - 11.96	1.43		(Bq/L)
Manganese-54	254	246	A		3.3	172.20 - 319.80	0.94	L	(Bq/L)
Nickel-63	93.6	88.3	A		6.0	61.81 - 114.79	1.43	L	(Bq/L)
Plutonium-238	-0.047		A				0.021		(Bq/L)
Plutonium-239/240	2.67	2.99	A		-10.7	2.09 - 3.89	0.17		(Bq/L)
Strontium-90	5.22	4.8	A		8.8	3.36 - 6.24	0.32		(Bq/L)
Uranium-234/233	0.929	0.98	A		-5.2	0.69 - 1.27	0.073		(Bq/L)
Uranium-238	7.55	7.8	A		-3.2	5.46 - 10.14	0.46		(Bq/L)
Zinc-65	71.6	67.3	A		6.4	47.11 - 87.49	1.16	L	(Bq/L)

- Flags:** A = Result acceptable Bias <= 20%
W = Result acceptable with warning 20% < Bias <= 30%
N = Result not acceptable Bias > 30%
L = Uncertainty potentially too low (for infomation purposes only)
H = Uncertainty potentially too high (for information purposes only)
QL = Detection Limit
RW = Report Warning
NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Enviro-Test Laboratories, LLC
CORE01 420 WEST 1ST STREET

CASPER WY 82601

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

STL Denver
CORE02 4955 Yarrow St

Arvada CO 80002

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.46	1.53	A		-4.6	1.07 - 1.99			(mg/L)
Arsenic	0.23	0.238	A		-3.4	0.17 - 0.31			(mg/L)
Barium	2.87	2.86	A		0.3	2.00 - 3.72			(mg/L)
Cadmium	0.19	0.191	A		-0.5	0.13 - 0.25			(mg/L)
Chromium	0.38	0.382	A		-0.5	0.27 - 0.50			(mg/L)
Copper	4.62	4.77	A		-3.1	3.34 - 6.20			(mg/L)
Lead	0.48	0.477	A		0.6	0.33 - 0.62			(mg/L)
Nickel	0.78	0.763	A		2.2	0.53 - 0.99			(mg/L)
Selenium	0.72	0.763	A		-5.6	0.53 - 0.99			(mg/L)
Thallium	1.11	1.14	A		-2.6	0.80 - 1.48			(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.71	0.716	A		-0.8	0.50 - 0.93			(mg/L)
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	1.1540	1.19	A		-3.0	0.83 - 1.55	0.0281	L	(Bq/L)
Cesium-134	27.3	28.5	A		-4.2	19.95 - 37.05	1.1		(Bq/L)
Cesium-137	283	286	A		-1.0	200.20 - 371.80	7	L	(Bq/L)
Cobalt-57	142	143	A		-0.7	100.10 - 185.90	5		(Bq/L)
Cobalt-60	147	141	A		4.3	98.70 - 183.30	3	L	(Bq/L)
Manganese-54	257	246	A		4.5	172.20 - 319.80	6	L	(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-238	0.0185		A				0.0062		(Bq/L)
Plutonium-239/240	2.8316	2.99	A		-5.3	2.09 - 3.89	0.056	L	(Bq/L)
Strontium-90	3.073	4.8	N		-36.0	3.36 - 6.24	0.095		(Bq/L)
Uranium-234/233	1.0708	0.98	A		9.3	0.69 - 1.27	0.0285	L	(Bq/L)
Uranium-235	0.1302						0.0104		(Bq/L)
Uranium-238	7.9361	7.8	A		1.7	5.46 - 10.14	0.0775	L	(Bq/L)
Zinc-65	72.8	67.3	A		8.2	47.11 - 87.49	1.8	L	(Bq/L)

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

STL Denver
CORE02 4955 Yarrow St

Arvada CO 80002

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	41	41.4	A		-0.1	15.85 - 67.03	(ug/L)
Hexachloroethane	86	75.9	A		0.5	17.71 - 134.18	(ug/L)
Nitrobenzene	45	49.4	A		-0.5	24.07 - 74.81	(ug/L)
2,4-Dimethylphenol	64	72.1	A		-0.5	22.33 - 121.96	(ug/L)
2,4-Dichlorophenol	57	61.4	A		-0.4	24.84 - 97.98	(ug/L)
1,2,4-Trichlorobenzene	48	48	A		0.0	23.74 - 72.26	(ug/L)
Naphthalene	37	38.1	A		-0.2	18.38 - 57.75	(ug/L)
Hexachlorobutadiene	38	32.2	A		0.7	6.83 - 57.53	(ug/L)
2,6-Dichlorophenol	33	37.3	A		-0.6	15.80 - 58.74	(ug/L)
2,6-Dinitrotoluene	39	46.2	A		-1.1	26.37 - 66.02	(ug/L)
2,4-Dinitrotoluene	80	86.4	A		-0.4	35.61 - 137.29	(ug/L)
Diethylphthalate	37	40	A		-0.4	16.45 - 63.53	(ug/L)
Hexachlorobenzene	36	39.3	A		-0.2	QL - 85.90	(ug/L)
Anthracene	35	42.6	A		-0.5	0.91 - 84.30	(ug/L)
Pentachlorobenzene	41	47.7	A		-0.6	11.94 - 83.38	(ug/L)
Fluoranthene	37	41.9	A		-0.4	2.35 - 81.40	(ug/L)
Pyrene	47	49.5	A		-0.2	QL - 99.54	(ug/L)
Benzo(a)anthracene	30	36.6	A		-0.6	1.23 - 71.95	(ug/L)

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

LOS ALAMOS NATIONAL LABORATORY
CSTL01 SM30, BIKINI ATOLL ROAD
 LOS ALAMOS NM 87545

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	1.0835	1.19	A		-8.9	0.83 - 1.55	0.1279		(Bq/L)
Cesium-134	25.8667	28.5	A		-9.2	19.95 - 37.05	3.0000		(Bq/L)
Cesium-137	257.3333	286	A		-10.0	200.20 - 371.80	28.6667		(Bq/L)
Cobalt-57	129.0000	143	A		-9.8	100.10 - 185.90	14.3333		(Bq/L)
Cobalt-60	133.3333	141	A		-5.4	98.70 - 183.30	15.0000		(Bq/L)
Manganese-54	233.0000	246	A		-5.3	172.20 - 319.80	26.0000		(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-238	0.0020		N	False Positive			0.0005		(Bq/L)
Plutonium-239/240	0.2909	2.99	N		-90.3	2.09 - 3.89	0.0442		(Bq/L)
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	1.0257	0.98	A		4.7	0.69 - 1.27	0.0295	L	(Bq/L)
Uranium-238	7.8414	7.8	A		0.5	5.46 - 10.14	0.2368		(Bq/L)
Zinc-65	63.7333	67.3	A		-5.3	47.11 - 87.49	7.3667		(Bq/L)

Flags: A = Result acceptable Bias <= 20%
 W = Result acceptable with warning 20% < Bias <= 30%
 N = Result not acceptable Bias > 30%
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

LOS ALAMOS NATIONAL LABORATORY
CSTL01 SM30, BIKINI ATOLL ROAD
 LOS ALAMOS NM 87545

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

U. S. EPA Office of Radiation and Indoor Air
EPAL01 944 E. Harmon Ave.
 Las Vegas NV 89119

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	24.76	28.5	A		-13.1	19.95 - 37.05	1.51		(Bq/L)
Cesium-137	267.69	286	A		-6.4	200.20 - 371.80	15.11		(Bq/L)
Cobalt-57	135.28	143	A		-5.4	100.10 - 185.90	6.70		(Bq/L)
Cobalt-60	142.02	141	A		0.7	98.70 - 183.30	7.05		(Bq/L)
Manganese-54	247.64	246	A		0.7	172.20 - 319.80	13.37		(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	70.91	67.3	A		5.4	47.11 - 87.49	4.00		(Bq/L)

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

U. S. EPA Office of Radiation and Indoor Air
EPAL01
 944 E. Harmon Ave.

Las Vegas NV 89119

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Public Health Laboratories
ERCL01 1610 N.E. 150 th Srteet
 Shoreline WA 98155

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.534	1.53	A		0.3	1.07 - 1.99	0.153		(mg/L)
Arsenic	0.234	0.238	A		-1.7	0.17 - 0.31	0.023		(mg/L)
Barium	2.947	2.86	A		3.0	2.00 - 3.72	0.295		(mg/L)
Cadmium	0.192	0.191	A		0.5	0.13 - 0.25	0.019		(mg/L)
Chromium	0.387	0.382	A		1.3	0.27 - 0.50	0.039		(mg/L)
Copper	4.674	4.77	A		-2.0	3.34 - 6.20	0.467		(mg/L)
Lead	0.479	0.477	A		0.4	0.33 - 0.62	0.048		(mg/L)
Nickel	0.763	0.763	A		0.0	0.53 - 0.99	0.076		(mg/L)
Selenium	0.775	0.763	A		1.6	0.53 - 0.99	0.078		(mg/L)
Thallium	1.153	1.14	A		1.1	0.80 - 1.48	0.115		(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.741	0.716	A		3.5	0.50 - 0.93	0.074		(mg/L)
Zinc	0.298	0.314	A		-5.1	0.22 - 0.41	0.030		(mg/L)
Americium-241	1.09	1.19	A		-8.4	0.83 - 1.55	0.05		(Bq/L)
Cesium-134	23.9	28.5	A		-16.1	19.95 - 37.05	0.8		(Bq/L)
Cesium-137	278	286	A		-2.8	200.20 - 371.80	16		(Bq/L)
Cobalt-57	138	143	A		-3.5	100.10 - 185.90	3	L	(Bq/L)
Cobalt-60	143	141	A		1.4	98.70 - 183.30	1	L	(Bq/L)
Manganese-54	259	246	A		5.3	172.20 - 319.80	12		(Bq/L)
Nickel-63	97.6	88.3	A		10.5	61.81 - 114.79	4.9		(Bq/L)
Plutonium-238	0.056		A				0.028		(Bq/L)
Plutonium-239/240	2.73	2.99	A		-8.7	2.09 - 3.89	0.07	L	(Bq/L)
Strontium-90	4.77	4.8	A		-0.6	3.36 - 6.24	0.22		(Bq/L)
Uranium-234/233	.95	0.98	A		-3.1	0.69 - 1.27	0.05		(Bq/L)
Uranium-238	7.44	7.8	A		-4.6	5.46 - 10.14	0.23		(Bq/L)
Zinc-65	73.6	67.3	A		9.4	47.11 - 87.49	1.7	L	(Bq/L)

Flags: A = Result acceptable Bias <= 20%
 W = Result acceptable with warning 20% < Bias <= 30%
 N = Result not acceptable Bias > 30%
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Public Health Laboratories
ERCL01 1610 N.E. 150 th Street
 Shoreline WA 98155

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Radiation Protection Bureau ERHD NMS

ERHD99 775 Brookfield Road AL6302D1

Ottawa Ontario K1A 1

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	NR	28.5				19.95 - 37.05			
Cesium-137	NR	286				200.20 - 371.80			
Cobalt-57	NR	143				100.10 - 185.90			
Cobalt-60	NR	141				98.70 - 183.30			
Manganese-54	NR	246				172.20 - 319.80			
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	4.55	4.8	A		-5.2	3.36 - 6.24	0.18		(Bq/L)
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	NR	67.3				47.11 - 87.49			

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Radiation Protection Bureau ERHD NMS
ERHD99 775 Brookfield Road AL6302D1

Ottawa Ontario K1A 1

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

RMI Environmental Services
ERMI01 1601 East 21st Street

Ashtabula OH 44004

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	2.86	2.86	A		0.0	2.00 - 3.72	0.30		(mg/L)
Cadmium	0.17	0.191	A		-11.0	0.13 - 0.25	0.02		(mg/L)
Chromium	0.34	0.382	A		-11.0	0.27 - 0.50	0.03		(mg/L)
Copper	4.64	4.77	A		-2.7	3.34 - 6.20	0.50		(mg/L)
Lead	0.45	0.477	A		-5.7	0.33 - 0.62	0.05		(mg/L)
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	0.65	0.628	A		3.5	0.44 - 0.82	0.06		(mg/L)
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	0.27	0.314	A		-14.0	0.22 - 0.41	0.03		(mg/L)
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	25	28.5	A		-12.3	19.95 - 37.05	2		(Bq/L)
Cesium-137	268	286	A		-6.3	200.20 - 371.80	4	L	(Bq/L)
Cobalt-57	129	143	A		-9.8	100.10 - 185.90	6		(Bq/L)
Cobalt-60	133	141	A		-5.7	98.70 - 183.30	5		(Bq/L)
Manganese-54	242	246	A		-1.6	172.20 - 319.80	5	L	(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	63	67.3	A		-6.4	47.11 - 87.49	2		(Bq/L)

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

RMI Environmental Services
ERMI01 1601 East 21st Street
 Ashtabula OH 44004

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Fluor Fernald
FERM01 P.O. Box 538704

Cincinnati OH 45253

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.643	1.53	A		7.4	1.07 - 1.99	0.000250	L	(mg/L)
Arsenic	0.25333	0.238	A		6.4	0.17 - 0.31	0.001990	L	(mg/L)
Barium	2.7467	2.86	A		-4.0	2.00 - 3.72	0.004300	L	(mg/L)
Beryllium	<0.1		A						(mg/L)
Cadmium	0.186	0.191	A		-2.6	0.13 - 0.25	0.000180	L	(mg/L)
Chromium	0.379	0.382	A		-0.8	0.27 - 0.50	0.000340	L	(mg/L)
Copper	4.70	4.77	A		-1.5	3.34 - 6.20	0.007940	L	(mg/L)
Lead	0.46	0.477	A		-3.6	0.33 - 0.62	0.00043	L	(mg/L)
Nickel	0.754	0.763	A		-1.2	0.53 - 0.99	0.000740	L	(mg/L)
Selenium	0.7280	0.763	A		-4.6	0.53 - 0.99	0.00072	L	(mg/L)
Silver	<0.05		A						(mg/L)
Thallium	1.190	1.14	A		4.4	0.80 - 1.48	0.001170	L	(mg/L)
Uranium-Total	0.717	0.628	A		14.2	0.44 - 0.82	0.082		(mg/L)
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.76	0.716	A		6.1	0.50 - 0.93	0.000790	L	(mg/L)
Zinc	0.28	0.314	A		-10.8	0.22 - 0.41	0.000290	L	(mg/L)
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	24.1	28.5	A		-15.4	19.95 - 37.05	1.8		(Bq/L)
Cesium-137	273	286	A		-4.5	200.20 - 371.80	32		(Bq/L)
Cobalt-57	132	143	A		-7.7	100.10 - 185.90	9		(Bq/L)
Cobalt-60	130	141	A		-7.8	98.70 - 183.30	7		(Bq/L)
Manganese-54	250	246	A		1.6	172.20 - 319.80	22		(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-238	0.033		N	False Positive			0.008		(Bq/L)
Plutonium-239/240	2.90	2.99	A		-3.0	2.09 - 3.89	0.33		(Bq/L)
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	1.16	0.98	A		18.4	0.69 - 1.27	0.14		(Bq/L)
Uranium-238	8.90	7.8	A		14.1	5.46 - 10.14	1.02		(Bq/L)
Zinc-65	72.6	67.3	A		7.9	47.11 - 87.49	5.3		(Bq/L)

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Fluor Fernald
FERM01 P.O. Box 538704

Cincinnati OH 45253

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

General Engineering Laboratories Inc.
GENE01 2040 Savage Road
 Charleston SC 29417

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.53	1.53	A		0.0	1.07 - 1.99			(mg/L)
Arsenic	0.236	0.238	A		-0.8	0.17 - 0.31			(mg/L)
Barium	2.95	2.86	A		3.1	2.00 - 3.72			(mg/L)
Cadmium	0.189	0.191	A		-1.0	0.13 - 0.25			(mg/L)
Chromium	0.39	0.382	A		2.1	0.27 - 0.50			(mg/L)
Copper	4.84	4.77	A		1.5	3.34 - 6.20			(mg/L)
Lead	0.48	0.477	A		0.6	0.33 - 0.62			(mg/L)
Nickel	0.768	0.763	A		0.7	0.53 - 0.99			(mg/L)
Selenium	0.724	0.763	A		-5.1	0.53 - 0.99			(mg/L)
Thallium	1.15	1.14	A		0.9	0.80 - 1.48			(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.735	0.716	A		2.7	0.50 - 0.93			(mg/L)
Zinc	0.287	0.314	A		-8.6	0.22 - 0.41			(mg/L)
Americium-241	1.15	1.19	A		-3.4	0.83 - 1.55	0.059		(Bq/L)
Cesium-134	24.2	28.5	A		-15.1	19.95 - 37.05	1.26		(Bq/L)
Cesium-137	270	286	A		-5.6	200.20 - 371.80	13.2		(Bq/L)
Cobalt-57	137.023	143	A		-4.2	100.10 - 185.90	6.204		(Bq/L)
Cobalt-60	145.78	141	A		3.4	98.70 - 183.30	8.041		(Bq/L)
Iron-55	8.17	9.2	A		-11.2	6.44 - 11.96	0.314		(Bq/L)
Manganese-54	253.45	246	A		3.0	172.20 - 319.80	15.2		(Bq/L)
Nickel-63	91.6	88.3	A		3.7	61.81 - 114.79	1.63	L	(Bq/L)
Plutonium-238	0.020		N	False Positive			0.004		(Bq/L)
Plutonium-239/240	2.73	2.99	A		-8.7	2.09 - 3.89	0.139		(Bq/L)
Strontium-90	4.465	4.8	A		-7.0	3.36 - 6.24	0.088	L	(Bq/L)
Uranium-234/233	0.974	0.98	A		-0.6	0.69 - 1.27	0.060		(Bq/L)
Uranium-238	6.956	7.8	A		-10.8	5.46 - 10.14	0.348		(Bq/L)
Zinc-65	74.5	67.3	A		10.7	47.11 - 87.49	4.41		(Bq/L)

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

General Engineering Laboratories Inc.
GENE01 2040 Savage Road

Charleston SC 29417

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	33.3	41.4	A		-1.0	15.85 - 67.03	(ug/L)
Hexachloroethane	64.9	75.9	A		-0.6	17.71 - 134.18	(ug/L)
Nitrobenzene	50.5	49.4	A		0.1	24.07 - 74.81	(ug/L)
2,4-Dimethylphenol	85.7	72.1	A		0.8	22.33 - 121.96	(ug/L)
2,4-Dichlorophenol	68.7	61.4	A		0.6	24.84 - 97.98	(ug/L)
1,2,4-Trichlorobenzene	48.4	48	A		0.0	23.74 - 72.26	(ug/L)
Naphthalene	38.9	38.1	A		0.1	18.38 - 57.75	(ug/L)
Hexachlorobutadiene	33.7	32.2	A		0.2	6.83 - 57.53	(ug/L)
2,6-Dichlorophenol	35.3	37.3	A		-0.3	15.80 - 58.74	(ug/L)
2,6-Dinitrotoluene	43.1	46.2	A		-0.5	26.37 - 66.02	(ug/L)
2,4-Dinitrotoluene	91.2	86.4	A		0.3	35.61 - 137.29	(ug/L)
Diethylphthalate	39.1	40	A		-0.1	16.45 - 63.53	(ug/L)
Hexachlorobenzene	45.6	39.3	A		0.4	QL - 85.90	(ug/L)
Anthracene	48.9	42.6	A		0.5	0.91 - 84.30	(ug/L)
Pentachlorobenzene	53.4	47.7	A		0.5	11.94 - 83.38	(ug/L)
Fluoranthene	43.8	41.9	A		0.1	2.35 - 81.40	(ug/L)
Pyrene	65.3	49.5	A		0.9	QL - 99.54	(ug/L)
Benzo(a)anthracene	43.2	36.6	A		0.6	1.23 - 71.95	(ug/L)
Chrysene	44.5		N	False Positive			(ug/L)

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

FGL Environmental
GROW01 853 Corporation St.

Santa Paula CA 93060

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.37	1.53	A		-10.5	1.07 - 1.99			(mg/L)
Arsenic	0.230	0.238	A		-3.4	0.17 - 0.31			(mg/L)
Barium	2.70	2.86	A		-5.6	2.00 - 3.72			(mg/L)
Beryllium	<0.005		A						(mg/L)
Cadmium	0.177	0.191	A		-7.3	0.13 - 0.25			(mg/L)
Chromium	0.372	0.382	A		-2.6	0.27 - 0.50			(mg/L)
Copper	4.47	4.77	A		-6.3	3.34 - 6.20			(mg/L)
Lead	0.468	0.477	A		-1.9	0.33 - 0.62			(mg/L)
Nickel	0.746	0.763	A		-2.2	0.53 - 0.99			(mg/L)
Selenium	0.732	0.763	A		-4.1	0.53 - 0.99			(mg/L)
Silver	<0.01		A						(mg/L)
Thallium	1.12	1.14	A		-1.8	0.80 - 1.48			(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.685	0.716	A		-4.3	0.50 - 0.93			(mg/L)
Zinc	0.294	0.314	A		-6.4	0.22 - 0.41			(mg/L)
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	25.8	28.5	A		-9.5	19.95 - 37.05	3.3		(Bq/L)
Cesium-137	279	286	A		-2.4	200.20 - 371.80	40.78		(Bq/L)
Cobalt-57	111.4	143	W		-22.1	100.10 - 185.90	9.02		(Bq/L)
Cobalt-60	156.7	141	A		11.1	98.70 - 183.30	28.3		(Bq/L)
Manganese-54	184	246	W		-25.2	172.20 - 319.80	30.5		(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	45.7	67.3	N		-32.1	47.11 - 87.49	8.6		(Bq/L)

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

FGL Environmental
GROW01 853 Corporation St.

Santa Paula CA 93060

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

HWRL01 Lawrence Livermore National Laboratory - CES
7000 East Avenue
Livermore CA 94550

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.5	1.53	A		-2.0	1.07 - 1.99			(mg/L)
Arsenic	0.22	0.238	A		-7.6	0.17 - 0.31			(mg/L)
Barium	2.9	2.86	A		1.4	2.00 - 3.72			(mg/L)
Beryllium	0.011		A						(mg/L)
Cadmium	0.18	0.191	A		-5.8	0.13 - 0.25			(mg/L)
Chromium	0.37	0.382	A		-3.1	0.27 - 0.50			(mg/L)
Cobalt	<0.0014								(mg/L)
Copper	4.3	4.77	A		-9.9	3.34 - 6.20			(mg/L)
Lead	0.45	0.477	A		-5.7	0.33 - 0.62			(mg/L)
Manganese	<0.0063								(mg/L)
Mercury	<0.00045								(mg/L)
Molybdenum	<0.0030								(mg/L)
Nickel	0.74	0.763	A		-3.0	0.53 - 0.99			(mg/L)
Potassium	0.69								(mg/L)
Selenium	0.84	0.763	A		10.1	0.53 - 0.99			(mg/L)
Silver	<.0025		A						(mg/L)
Thallium	1.0	1.14	A		-12.3	0.80 - 1.48			(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.68	0.716	A		-5.0	0.50 - 0.93			(mg/L)
Zinc	0.27	0.314	A		-14.0	0.22 - 0.41			(mg/L)
Americium-241	1.16	1.19	A		-2.5	0.83 - 1.55	.633	H	(Bq/L)
Cesium-134	27.67	28.5	A		-2.9	19.95 - 37.05	1.34		(Bq/L)
Cesium-137	341.07	286	A		19.3	200.20 - 371.80	8.64	L	(Bq/L)
Cobalt-57	178.31	143	W		24.7	100.10 - 185.90	5.37		(Bq/L)
Cobalt-60	161.97	141	A		14.9	98.70 - 183.30	4.20	L	(Bq/L)
Manganese-54	321.89	246	N		30.9	172.20 - 319.80	8.45	L	(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-238	.0183		N	False Positive			.00458		(Bq/L)
Plutonium-239/240	2.81	2.99	A		-6.0	2.09 - 3.89	.135		(Bq/L)
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	.999	0.98	A		1.9	0.69 - 1.27	.0585		(Bq/L)
Uranium-235	.0829						.0147		(Bq/L)
Uranium-238	7.36	7.8	A		-5.6	5.46 - 10.14	.375		(Bq/L)
Zinc-65	96.13	67.3	N		42.8	47.11 - 87.49	3.99		(Bq/L)

- Flags:**
- A = Result acceptable Bias <= 20%
 - W = Result acceptable with warning 20% < Bias <= 30%
 - N = Result not acceptable Bias > 30%
 - L = Uncertainty potentially too low (for information purposes only)
 - H = Uncertainty potentially too high (for information purposes only)
 - QL = Detection Limit
 - RW = Report Warning
 - NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Lawrence Livermore National Laboratory - CES
HWRL01 7000 East Avenue
 Livermore CA 94550

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

IBTN99 Instituto Boliviano de Ciencia y Tech. Nuclear
Avenida 6 de Agosto 2905

La Paz Murillo 4821

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc Flag	Units
Antimony	1.394	1.53	A		-8.9	1.07 - 1.99	0.0279	L	(mg/L)
Arsenic	0.235	0.238	A		-1.3	0.17 - 0.31	0.0402		(mg/L)
Barium	NR	2.86				2.00 - 3.72			
Cadmium	0.261	0.191	N		36.6	0.13 - 0.25	0.0197		(mg/L)
Chromium	NR	0.382				0.27 - 0.50			
Copper	4.836	4.77	A		1.4	3.34 - 6.20	0.0181	L	(mg/L)
Lead	1.175	0.477	N		146.3	0.33 - 0.62	0.0141	L	(mg/L)
Nickel	0.806	0.763	A		5.6	0.53 - 0.99	0.0360		(mg/L)
Selenium	0.741	0.763	A		-2.9	0.53 - 0.99	0.0093	L	(mg/L)
Silver	0		A				0		(mg/L)
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	20.641	0.314	N		6473.6	0.22 - 0.41	0.6168	L	(mg/L)
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	NR	28.5				19.95 - 37.05			
Cesium-137	NR	286				200.20 - 371.80			
Cobalt-57	NR	143				100.10 - 185.90			
Cobalt-60	NR	141				98.70 - 183.30			
Manganese-54	NR	246				172.20 - 319.80			
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	NR	67.3				47.11 - 87.49			

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning $20\% < \text{Bias} \leq 30\%$

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

IBTN99 Instituto Boliviano de Ciencia y Tech. Nuclear
Avenida 6 de Agosto 2905

La Paz Murillo 4821

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags:	A = Result acceptable	Z-score <=2.0)
	W = Result acceptable with warning	2.0 < Z-score <=3.0)
	N = Result not acceptable	Z-score > 3.0)
	L = Uncertainty potentially too low (for information purposes only)	
	H = Uncertainty potentially too high (for information purposes only)	
	QL = Detection Limit	
	RW = Report Warning	
	NR = Not Reported	

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Oak Ridge National Laboratory-Internal Dosimetry Group
IDGR01 Bethel Valley Road

Oak Ridge TN 37831

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	1.1828	1.19	A		-0.6	0.83 - 1.55	0.1169		(Bq/L)
Cesium-134	NR	28.5				19.95 - 37.05			
Cesium-137	265.45	286	A		-7.2	200.20 - 371.80	8.05		(Bq/L)
Cobalt-57	135.78	143	A		-5.0	100.10 - 185.90	4.29		(Bq/L)
Cobalt-60	140.77	141	A		-0.2	98.70 - 183.30	4.16	L	(Bq/L)
Manganese-54	247.63	246	A		0.7	172.20 - 319.80	8.28		(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-238	0.0025		N	False Positive			0.0004		(Bq/L)
Plutonium-239/240	0.2761	2.99	N		-90.8	2.09 - 3.89	0.0247		(Bq/L)
Strontium-90	6.33	4.8	N		31.9	3.36 - 6.24	1.35	H	(Bq/L)
Uranium-234/233	0.9885	0.98	A		0.9	0.69 - 1.27	0.0913		(Bq/L)
Uranium-238	7.7168	7.8	A		-1.1	5.46 - 10.14	0.6880		(Bq/L)
Zinc-65	70.80	67.3	A		5.2	47.11 - 87.49	7.42		(Bq/L)

Flags: A = Result acceptable Bias <= 20%
W = Result acceptable with warning 20% < Bias <= 30%
N = Result not acceptable Bias > 30%
L = Uncertainty potentially too low (for information purposes only)
H = Uncertainty potentially too high (for information purposes only)
QL = Detection Limit
RW = Report Warning
NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Oak Ridge National Laboratory-Internal Dosimetry Group
IDGR01
 Bethel Valley Road

Oak Ridge TN 37831

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Lawrence Livermore National Laboratory
LAWR02 7000 East Avenue
 Livermore CA 94550

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	27.4	28.5	A		-3.9	19.95 - 37.05	1.04		(Bq/L)
Cesium-137	283.4	286	A		-0.9	200.20 - 371.80	8.79		(Bq/L)
Cobalt-57	146.4	143	A		2.4	100.10 - 185.90	4.59		(Bq/L)
Cobalt-60	147.7	141	A		4.8	98.70 - 183.30	4.61		(Bq/L)
Manganese-54	257.6	246	A		4.7	172.20 - 319.80	8.07		(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-238	NR		RW						
Plutonium-239/240	3.04	2.99	A		1.7	2.09 - 3.89	0.08	L	(Bq/L)
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	72.9	67.3	A		8.3	47.11 - 87.49	3.24		(Bq/L)

Flags: A = Result acceptable Bias <= 20%
 W = Result acceptable with warning 20% < Bias <= 30%
 N = Result not acceptable Bias > 30%
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Lawrence Livermore National Laboratory
LAWR02 7000 East Avenue
 Livermore CA 94550

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

National Institute for Physics and Nuclear Engineering
LEPD99 Life and Environmental Physics Department
 Bucharest Magurele R-769

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	NR	28.5				19.95 - 37.05			
Cesium-137	NR	286				200.20 - 371.80			
Cobalt-57	NR	143				100.10 - 185.90			
Cobalt-60	NR	141				98.70 - 183.30			
Manganese-54	NR	246				172.20 - 319.80			
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	6.61	4.8	N		37.7	3.36 - 6.24	0.94		(Bq/L)
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	NR	67.3				47.11 - 87.49			

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

National Institute for Physics and Nuclear Engineering
LEPD99 Life and Environmental Physics Department
 Bucharest Magurele R-769

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

BBWI Analytical Laboratories Department
LOCK01 P.O. Box 1625

Idaho Falls ID 83415

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.43	1.53	A		-6.5	1.07 - 1.99	0.14		(mg/L)
Arsenic	0.23	0.238	A		-3.4	0.17 - 0.31	0.02		(mg/L)
Barium	2.79	2.86	A		-2.4	2.00 - 3.72	0.28		(mg/L)
Cadmium	0.19	0.191	A		-0.5	0.13 - 0.25	0.02		(mg/L)
Chromium	0.37	0.382	A		-3.1	0.27 - 0.50	0.04		(mg/L)
Copper	4.41	4.77	A		-7.5	3.34 - 6.20	0.44		(mg/L)
Lead	0.47	0.477	A		-1.5	0.33 - 0.62	0.05		(mg/L)
Nickel	0.73	0.763	A		-4.3	0.53 - 0.99	0.07		(mg/L)
Selenium	0.74	0.763	A		-3.0	0.53 - 0.99	0.07		(mg/L)
Thallium	1.07	1.14	A		-6.1	0.80 - 1.48	0.11		(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.68	0.716	A		-5.0	0.50 - 0.93	0.07		(mg/L)
Zinc	0.28	0.314	A		-10.8	0.22 - 0.41	0.03		(mg/L)
Americium-241	1.20	1.19	A		0.8	0.83 - 1.55	0.12		(Bq/L)
Cesium-134	28.6	28.5	A		0.4	19.95 - 37.05	1.4		(Bq/L)
Cesium-137	290	286	A		1.4	200.20 - 371.80	12		(Bq/L)
Cobalt-57	144	143	A		0.7	100.10 - 185.90	11		(Bq/L)
Cobalt-60	151	141	A		7.1	98.70 - 183.30	7		(Bq/L)
Manganese-54	264	246	A		7.3	172.20 - 319.80	9		(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-238	NR		RW						
Plutonium-239/240	2.87	2.99	A		-4.0	2.09 - 3.89	0.07	L	(Bq/L)
Strontium-90	4.62	4.8	A		-3.8	3.36 - 6.24	0.20		(Bq/L)
Uranium-234/233	1.12	0.98	A		14.3	0.69 - 1.27	0.22		(Bq/L)
Uranium-238	7.39	7.8	A		-5.3	5.46 - 10.14	0.13	L	(Bq/L)
Zinc-65	76.2	67.3	A		13.2	47.11 - 87.49	3.3		(Bq/L)

- Flags:** A = Result acceptable Bias <= 20%
 W = Result acceptable with warning 20% < Bias <= 30%
 N = Result not acceptable Bias > 30%
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

BBWI Analytical Laboratories Department
LOCK01 P.O. Box 1625

Idaho Falls ID 83415

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	40	41.4	A		-0.2	15.85 - 67.03	(ug/L)
Hexachloroethane	83	75.9	A		0.4	17.71 - 134.18	(ug/L)
Nitrobenzene	41	49.4	A		-1.0	24.07 - 74.81	(ug/L)
2,4-Dimethylphenol	55	72.1	A		-1.0	22.33 - 121.96	(ug/L)
2,4-Dichlorophenol	47	61.4	A		-1.2	24.84 - 97.98	(ug/L)
1,2,4-Trichlorobenzene	47	48	A		-0.1	23.74 - 72.26	(ug/L)
Naphthalene	25	38.1	A		-2.0	18.38 - 57.75	(ug/L)
Hexachlorobutadiene	28	32.2	A		-0.5	6.83 - 57.53	(ug/L)
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	46	46.2	A		0.0	26.37 - 66.02	(ug/L)
2,4-Dinitrotoluene	81	86.4	A		-0.3	35.61 - 137.29	(ug/L)
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	26	39.3	A		-0.9	QL - 85.90	(ug/L)
Anthracene	34	42.6	A		-0.6	0.91 - 84.30	(ug/L)
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	43	41.9	A		0.1	2.35 - 81.40	(ug/L)
Pyrene	40	49.5	A		-0.6	QL - 99.54	(ug/L)
Benzo(a)anthracene	20	36.6	A		-1.4	1.23 - 71.95	(ug/L)

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

RADIATION MEASUREMENTS LABORATORY/AEDL
LOCK03 INEEL

Idaho Falls ID 83415

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	1.18	1.19	A		-0.8	0.83 - 1.55	.07		(Bq/L)
Cesium-134	26.4	28.5	A		-7.4	19.95 - 37.05	1.0		(Bq/L)
Cesium-137	269	286	A		-5.9	200.20 - 371.80	5	L	(Bq/L)
Cobalt-57	137	143	A		-4.2	100.10 - 185.90	2	L	(Bq/L)
Cobalt-60	143	141	A		1.4	98.70 - 183.30	2	L	(Bq/L)
Iron-55	5.1	9.2	N		-44.6	6.44 - 11.96	1.8		(Bq/L)
Manganese-54	246	246	A		0.0	172.20 - 319.80	3	L	(Bq/L)
Nickel-63	97	88.3	A		9.9	61.81 - 114.79	7		(Bq/L)
Plutonium-238	.02		A				.03		(Bq/L)
Plutonium-239/240	2.47	2.99	A		-17.4	2.09 - 3.89	.14		(Bq/L)
Strontium-90	4.56	4.8	A		-5.0	3.36 - 6.24	.25		(Bq/L)
Uranium-234/233	0.95	0.98	A		-3.1	0.69 - 1.27	.07		(Bq/L)
Uranium-238	7.3	7.8	A		-6.4	5.46 - 10.14	0.5		(Bq/L)
Zinc-65	71	67.3	A		5.5	47.11 - 87.49	2	L	(Bq/L)

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

RADIATION MEASUREMENTS LABORATORY/AEDL
LOCK03 INEEL

Idaho Falls ID 83415

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

LPTO99 Center for Environmental Chemistry SPA
82 Lenin av.
Obninsk Kaluga re 24903

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc Flag	Units
Antimony	1.510	1.53	A		-1.3	1.07 - 1.99			(mg/L)
Arsenic	0.225	0.238	A		-5.5	0.17 - 0.31			(mg/L)
Barium	3.150	2.86	A		10.1	2.00 - 3.72			(mg/L)
Cadmium	0.199	0.191	A		4.2	0.13 - 0.25			(mg/L)
Chromium	0.400	0.382	A		4.7	0.27 - 0.50			(mg/L)
Copper	4.600	4.77	A		-3.6	3.34 - 6.20			(mg/L)
Lead	0.430	0.477	A		-9.9	0.33 - 0.62			(mg/L)
Nickel	0.730	0.763	A		-4.3	0.53 - 0.99			(mg/L)
Selenium	0.650	0.763	A		-14.8	0.53 - 0.99			(mg/L)
Thallium	1.465	1.14	W		28.5	0.80 - 1.48			(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.660	0.716	A		-7.8	0.50 - 0.93			(mg/L)
Zinc	0.275	0.314	A		-12.4	0.22 - 0.41			(mg/L)
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	NR	28.5				19.95 - 37.05			
Cesium-137	NR	286				200.20 - 371.80			
Cobalt-57	NR	143				100.10 - 185.90			
Cobalt-60	NR	141				98.70 - 183.30			
Manganese-54	NR	246				172.20 - 319.80			
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	NR	67.3				47.11 - 87.49			

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning $20\% < \text{Bias} \leq 30\%$

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

LPTO99 Center for Environmental Chemistry SPA
82 Lenin av.
Obninsk Kaluga re 249

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	72.7	41.4	N		3.7	15.85 - 67.03	(ug/L)
Hexachloroethane	54.0	75.9	A		-1.1	17.71 - 134.18	(ug/L)
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	56.2	72.1	A		-1.0	22.33 - 121.96	(ug/L)
2,4-Dichlorophenol	76.1	61.4	A		1.2	24.84 - 97.98	(ug/L)
1,2,4-Trichlorobenzene	49.8	48	A		0.2	23.74 - 72.26	(ug/L)
Naphthalene	47.6	38.1	A		1.5	18.38 - 57.75	(ug/L)
Hexachlorobutadiene	48.3	32.2	A		1.9	6.83 - 57.53	(ug/L)
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	46.6	46.2	A		0.1	26.37 - 66.02	(ug/L)
2,4-Dinitrotoluene	93.0	86.4	A		0.4	35.61 - 137.29	(ug/L)
Diethylphthalate	24.0	40	W		-2.0	16.45 - 63.53	(ug/L)
Hexachlorobenzene	35.9	39.3	A		-0.2	QL - 85.90	(ug/L)
Anthracene	45.2	42.6	A		0.2	0.91 - 84.30	(ug/L)
Pentachlorobenzene	59.4	47.7	A		1.0	11.94 - 83.38	(ug/L)
Fluoranthene	26.0	41.9	A		-1.2	2.35 - 81.40	(ug/L)
Pyrene	49.0	49.5	A		0.0	QL - 99.54	(ug/L)
Benzo(a)anthracene	39.2	36.6	A		0.2	1.23 - 71.95	(ug/L)

Flags:	A = Result acceptable	Z-score <=2.0)
	W = Result acceptable with warning	2.0 < Z-score <=3.0)
	N = Result not acceptable	Z-score > 3.0)
	L = Uncertainty potentially too low (for information purposes only)	
	H = Uncertainty potentially too high (for information purposes only)	
	QL = Detection Limit	
	RW = Report Warning	
	NR = Not Reported	

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

USEC, Inc.

MART01 Lab COC, Bldg. X-710, Rm 222

Piketon

OH

45661

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.51	1.53	A		-1.3	1.07 - 1.99			(mg/L)
Arsenic	.237	0.238	A		-0.4	0.17 - 0.31			(mg/L)
Barium	2.82	2.86	A		-1.4	2.00 - 3.72			(mg/L)
Cadmium	.202	0.191	A		5.8	0.13 - 0.25			(mg/L)
Chromium	.374	0.382	A		-2.1	0.27 - 0.50			(mg/L)
Copper	4.730	4.77	A		-0.8	3.34 - 6.20			(mg/L)
Lead	.485	0.477	A		1.7	0.33 - 0.62			(mg/L)
Nickel	.775	0.763	A		1.6	0.53 - 0.99			(mg/L)
Selenium	.759	0.763	A		-0.5	0.53 - 0.99			(mg/L)
Thallium	1.160	1.14	A		1.8	0.80 - 1.48			(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	.702	0.716	A		-2.0	0.50 - 0.93			(mg/L)
Zinc	.285	0.314	A		-9.2	0.22 - 0.41			(mg/L)
Americium-241	1.204	1.19	A		1.2	0.83 - 1.55	.0682		(Bq/L)
Cesium-134	22	28.5	W		-22.8	19.95 - 37.05	2		(Bq/L)
Cesium-137	258	286	A		-9.8	200.20 - 371.80	10		(Bq/L)
Cobalt-57	129	143	A		-9.8	100.10 - 185.90	4		(Bq/L)
Cobalt-60	138	141	A		-2.1	98.70 - 183.30	4	L	(Bq/L)
Manganese-54	243	246	A		-1.2	172.20 - 319.80	9		(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-238	0.0588		N	False Positive			0.0109		(Bq/L)
Plutonium-239/240	2.695	2.99	A		-9.9	2.09 - 3.89	0.245		(Bq/L)
Strontium-90	4.28	4.8	A		-10.8	3.36 - 6.24	0.24		(Bq/L)
Uranium-234/233	1.051	0.98	A		7.2	0.69 - 1.27	0.0974		(Bq/L)
Uranium-238	8.255	7.8	A		5.8	5.46 - 10.14	0.759		(Bq/L)
Zinc-65	72	67.3	A		7.0	47.11 - 87.49	4		(Bq/L)

Flags:

A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

USEC, Inc.

MART01 Lab COC, Bldg. X-710, Rm 222

Piketon

OH

45661

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	46	41.4	A		0.5	15.85 - 67.03	(ug/L)
Hexachloroethane	47	75.9	A		-1.5	17.71 - 134.18	(ug/L)
Nitrobenzene	52	49.4	A		0.3	24.07 - 74.81	(ug/L)
2,4-Dimethylphenol	90	72.1	A		1.1	22.33 - 121.96	(ug/L)
2,4-Dichlorophenol	68	61.4	A		0.5	24.84 - 97.98	(ug/L)
1,2,4-Trichlorobenzene	32	48	A		-2.0	23.74 - 72.26	(ug/L)
Naphthalene	36	38.1	A		-0.3	18.38 - 57.75	(ug/L)
Hexachlorobutadiene	15	32.2	W		-2.0	6.83 - 57.53	(ug/L)
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	46	46.2	A		0.0	26.37 - 66.02	(ug/L)
2,4-Dinitrotoluene	84	86.4	A		-0.1	35.61 - 137.29	(ug/L)
Diethylphthalate	46	40	A		0.8	16.45 - 63.53	(ug/L)
Hexachlorobenzene	11	39.3	A		-1.8	QL - 85.90	(ug/L)
Anthracene	11	42.6	W		-2.3	0.91 - 84.30	(ug/L)
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	13	41.9	W		-2.2	2.35 - 81.40	(ug/L)
Pyrene	15	49.5	W		-2.1	QL - 99.54	(ug/L)
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags:

A = Result acceptable	Z-score ≤ 2.0
W = Result acceptable with warning	$2.0 < \text{Z-score} \leq 3.0$
N = Result not acceptable	Z-score > 3.0
L = Uncertainty potentially too low (for information purposes only)	
H = Uncertainty potentially too high (for information purposes only)	
QL = Detection Limit	
RW = Report Warning	
NR = Not Reported	

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

United States Enrichment Corporation
MART02 5600 Hobbs Road

Paducah KY 42001

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.66	1.53	A		8.5	1.07 - 1.99			(mg/L)
Arsenic	0.215	0.238	A		-9.7	0.17 - 0.31			(mg/L)
Barium	2.82	2.86	A		-1.4	2.00 - 3.72			(mg/L)
Cadmium	0.182	0.191	A		-4.7	0.13 - 0.25			(mg/L)
Chromium	0.370	0.382	A		-3.1	0.27 - 0.50			(mg/L)
Copper	4.68	4.77	A		-1.9	3.34 - 6.20			(mg/L)
Lead	0.902	0.477	N		89.1	0.33 - 0.62			(mg/L)
Nickel	0.730	0.763	A		-4.3	0.53 - 0.99			(mg/L)
Selenium	0.752	0.763	A		-1.4	0.53 - 0.99			(mg/L)
Thallium	1.1	1.14	A		-3.5	0.80 - 1.48			(mg/L)
Uranium-Total	0.60	0.628	A		-4.5	0.44 - 0.82			(mg/L)
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.746	0.716	A		4.2	0.50 - 0.93			(mg/L)
Zinc	0.277	0.314	A		-11.8	0.22 - 0.41			(mg/L)
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	28.51	28.5	A		0.0	19.95 - 37.05	5.01		(Bq/L)
Cesium-137	276.25	286	A		-3.4	200.20 - 371.80	42.26		(Bq/L)
Cobalt-57	NR	143				100.10 - 185.90			
Cobalt-60	145.85	141	A		3.4	98.70 - 183.30	21.4		(Bq/L)
Manganese-54	NR	246				172.20 - 319.80			
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-238	NR		RW						
Plutonium-239/240	2.78	2.99	A		-7.0	2.09 - 3.89	0.312		(Bq/L)
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	NR	67.3				47.11 - 87.49			

- Flags:** A = Result acceptable Bias <= 20%
 W = Result acceptable with warning 20% < Bias <= 30%
 N = Result not acceptable Bias > 30%
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

United States Enrichment Corporation
MART02 5600 Hobbs Road

Paducah KY 42001

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	47	41.4	A		0.7	15.85 - 67.03	(ug/L)
Hexachloroethane	76	75.9	A		0.0	17.71 - 134.18	(ug/L)
Nitrobenzene	53	49.4	A		0.4	24.07 - 74.81	(ug/L)
2,4-Dimethylphenol	69	72.1	A		-0.2	22.33 - 121.96	(ug/L)
2,4-Dichlorophenol	66	61.4	A		0.4	24.84 - 97.98	(ug/L)
1,2,4-Trichlorobenzene	52	48	A		0.5	23.74 - 72.26	(ug/L)
Naphthalene	40	38.1	A		0.3	18.38 - 57.75	(ug/L)
Hexachlorobutadiene	34	32.2	A		0.2	6.83 - 57.53	(ug/L)
2,6-Dichlorophenol	38	37.3	A		0.1	15.80 - 58.74	(ug/L)
2,6-Dinitrotoluene	51	46.2	A		0.7	26.37 - 66.02	(ug/L)
2,4-Dinitrotoluene	94	86.4	A		0.4	35.61 - 137.29	(ug/L)
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	53	39.3	A		0.9	QL - 85.90	(ug/L)
Anthracene	56	42.6	A		1.0	0.91 - 84.30	(ug/L)
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	56	41.9	A		1.1	2.35 - 81.40	(ug/L)
Pyrene	67	49.5	A		1.0	QL - 99.54	(ug/L)
Benzo(a)anthracene	47	36.6	A		0.9	1.23 - 71.95	(ug/L)

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Radioactive Material Analysis Laboratory
MART03 ORNL

Oak Ridge TN 37831

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.49	1.53	A		-2.6	1.07 - 1.99			(mg/L)
Arsenic	NR	0.238				0.17 - 0.31			
Barium	2.77	2.86	A		-3.1	2.00 - 3.72			(mg/L)
Beryllium	<0.005		A						(mg/L)
Cadmium	0.195	0.191	A		2.1	0.13 - 0.25			(mg/L)
Chromium	0.384	0.382	A		0.5	0.27 - 0.50			(mg/L)
Copper	4.45	4.77	A		-6.7	3.34 - 6.20			(mg/L)
Lead	0.482	0.477	A		1.0	0.33 - 0.62			(mg/L)
Nickel	0.824	0.763	A		8.0	0.53 - 0.99			(mg/L)
Selenium	NR	0.763				0.53 - 0.99			
Silver	<0.005		A						(mg/L)
Thallium	1.19	1.14	A		4.4	0.80 - 1.48			(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.700	0.716	A		-2.2	0.50 - 0.93			(mg/L)
Zinc	0.294	0.314	A		-6.4	0.22 - 0.41			(mg/L)
Americium-241	1.2	1.19	A		0.8	0.83 - 1.55	0.1		(Bq/L)
Cesium-134	24	28.5	A		-15.8	19.95 - 37.05	1		(Bq/L)
Cesium-137	263	286	A		-8.0	200.20 - 371.80	2	L	(Bq/L)
Cobalt-57	135	143	A		-5.6	100.10 - 185.90	1	L	(Bq/L)
Cobalt-60	139	141	A		-1.4	98.70 - 183.30	1	L	(Bq/L)
Manganese-54	246	246	A		0.0	172.20 - 319.80	2	L	(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-238	0.017		A				0.009		(Bq/L)
Plutonium-239/240	2.8	2.99	A		-6.4	2.09 - 3.89	0.1		(Bq/L)
Strontium-90	4.50	4.8	A		-6.3	3.36 - 6.24	0.28		(Bq/L)
Uranium-234/233	1.2	0.98	W		22.4	0.69 - 1.27	0.1		(Bq/L)
Uranium-238	8.1	7.8	A		3.8	5.46 - 10.14	0.2	L	(Bq/L)
Zinc-65	70	67.3	A		4.0	47.11 - 87.49	2	L	(Bq/L)

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Radioactive Material Analysis Laboratory
MART03 ORNL

Oak Ridge TN 37831

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

MDPH-Radiation Control Program
MDPH01 MERL-Room 002

Jamaica Plain MA 02130

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	0.73	1.19	N		-38.7	0.83 - 1.55	0.13		(Bq/L)
Cesium-134	25.3	28.5	A		-11.2	19.95 - 37.05	0.46	L	(Bq/L)
Cesium-137	277	286	A		-3.1	200.20 - 371.80	6.17	L	(Bq/L)
Cobalt-57	140	143	A		-2.1	100.10 - 185.90	3.15	L	(Bq/L)
Cobalt-60	146	141	A		3.5	98.70 - 183.30	2.27	L	(Bq/L)
Manganese-54	256	246	A		4.1	172.20 - 319.80	5.24	L	(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	6.36	7.8	A		-18.5	5.46 - 10.14	2.36	H	(Bq/L)
Zinc-65	72.3	67.3	A		7.4	47.11 - 87.49	1.93	L	(Bq/L)

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

MDPH-Radiation Control Program

MDPH01 MERL-Room 002

Jamaica Plain MA 02130

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags:

- A = Result acceptable Z-score ≤ 2.0
- W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
- N = Result not acceptable Z-score > 3.0
- L = Uncertainty potentially too low (for information purposes only)
- H = Uncertainty potentially too high (for information purposes only)
- QL = Detection Limit
- RW = Report Warning
- NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Mountain States Analytical, Inc.
MOUN01 1645 West 2200 South
 Salt Lake City UT 84119

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.54	1.53	A		0.7	1.07 - 1.99	0.02	L	(mg/L)
Arsenic	0.24	0.238	A		0.8	0.17 - 0.31	0.02		(mg/L)
Barium	2.78	2.86	A		-2.8	2.00 - 3.72	0.05	L	(mg/L)
Cadmium	0.177	0.191	A		-7.3	0.13 - 0.25	0.004	L	(mg/L)
Chromium	0.36	0.382	A		-5.8	0.27 - 0.50	0.02		(mg/L)
Copper	4.52	4.77	A		-5.2	3.34 - 6.20	0.08	L	(mg/L)
Lead	0.45	0.477	A		-5.7	0.33 - 0.62	0.03		(mg/L)
Nickel	0.71	0.763	A		-6.9	0.53 - 0.99	0.02	L	(mg/L)
Selenium	0.73	0.763	A		-4.3	0.53 - 0.99	0.04		(mg/L)
Thallium	1.04	1.14	A		-8.8	0.80 - 1.48	0.04		(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.714	0.716	A		-0.3	0.50 - 0.93	0.007	L	(mg/L)
Zinc	0.31	0.314	A		-1.3	0.22 - 0.41	0.05		(mg/L)
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	NR	28.5				19.95 - 37.05			
Cesium-137	NR	286				200.20 - 371.80			
Cobalt-57	NR	143				100.10 - 185.90			
Cobalt-60	NR	141				98.70 - 183.30			
Manganese-54	NR	246				172.20 - 319.80			
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	NR	67.3				47.11 - 87.49			

- Flags:**
- A = Result acceptable Bias <= 20%
 - W = Result acceptable with warning 20% < Bias <= 30%
 - N = Result not acceptable Bias > 30%
 - L = Uncertainty potentially too low (for information purposes only)
 - H = Uncertainty potentially too high (for information purposes only)
 - QL = Detection Limit
 - RW = Report Warning
 - NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Mountain States Analytical, Inc.

MOUN01 1645 West 2200 South

Salt Lake City

UT

84119

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	43	41.4	A		0.2	15.85 - 67.03	(ug/L)
Hexachloroethane	77	75.9	A		0.1	17.71 - 134.18	(ug/L)
Nitrobenzene	54	49.4	A		0.5	24.07 - 74.81	(ug/L)
2,4-Dimethylphenol	78	72.1	A		0.4	22.33 - 121.96	(ug/L)
2,4-Dichlorophenol	68	61.4	A		0.5	24.84 - 97.98	(ug/L)
1,2,4-Trichlorobenzene	50	48	A		0.2	23.74 - 72.26	(ug/L)
Naphthalene	41	38.1	A		0.4	18.38 - 57.75	(ug/L)
Hexachlorobutadiene	33	32.2	A		0.1	6.83 - 57.53	(ug/L)
2,6-Dichlorophenol	38	37.3	A		0.1	15.80 - 58.74	(ug/L)
2,6-Dinitrotoluene	51	46.2	A		0.7	26.37 - 66.02	(ug/L)
2,4-Dinitrotoluene	102	86.4	A		0.9	35.61 - 137.29	(ug/L)
Diethylphthalate	33	40	A		-0.9	16.45 - 63.53	(ug/L)
Hexachlorobenzene	48	39.3	A		0.6	QL - 85.90	(ug/L)
Anthracene	51	42.6	A		0.6	0.91 - 84.30	(ug/L)
Pentachlorobenzene	57	47.7	A		0.8	11.94 - 83.38	(ug/L)
Fluoranthene	49	41.9	A		0.5	2.35 - 81.40	(ug/L)
Pyrene	58	49.5	A		0.5	QL - 99.54	(ug/L)
Benzo(a)anthracene	38	36.6	A		0.1	1.23 - 71.95	(ug/L)

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

National Air and Radiation Environmental Laboratory
NARL01 540 S. Morris Ave.

Montgomery AL 36115

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.596	1.53	A		4.3	1.07 - 1.99			(mg/L)
Arsenic	0.265	0.238	A		11.3	0.17 - 0.31			(mg/L)
Barium	2.933	2.86	A		2.6	2.00 - 3.72			(mg/L)
Cadmium	0.199	0.191	A		4.2	0.13 - 0.25			(mg/L)
Chromium	0.397	0.382	A		3.9	0.27 - 0.50			(mg/L)
Copper	4.961	4.77	A		4.0	3.34 - 6.20			(mg/L)
Lead	0.493	0.477	A		3.4	0.33 - 0.62			(mg/L)
Nickel	0.784	0.763	A		2.8	0.53 - 0.99			(mg/L)
Selenium	0.802	0.763	A		5.1	0.53 - 0.99			(mg/L)
Thallium	1.156	1.14	A		1.4	0.80 - 1.48			(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.729	0.716	A		1.8	0.50 - 0.93			(mg/L)
Zinc	0.298	0.314	A		-5.1	0.22 - 0.41			(mg/L)
Americium-241	1.006	1.19	A		-15.5	0.83 - 1.55	0.045	L	(Bq/L)
Cesium-134	26.41	28.5	A		-7.3	19.95 - 37.05	0.79		(Bq/L)
Cesium-137	281.7	286	A		-1.5	200.20 - 371.80	8.0	L	(Bq/L)
Cobalt-57	136.2	143	A		-4.8	100.10 - 185.90	3.9	L	(Bq/L)
Cobalt-60	139.6	141	A		-1.0	98.70 - 183.30	4.0	L	(Bq/L)
Manganese-54	256.1	246	A		4.1	172.20 - 319.80	7.3	L	(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-238	0.0096		A				0.0068		(Bq/L)
Plutonium-239/240	2.133	2.99	W		-28.7	2.09 - 3.89	0.089		(Bq/L)
Strontium-90	4.96	4.8	A		3.3	3.36 - 6.24	0.29		(Bq/L)
Uranium-234/233	0.946	0.98	A		-3.5	0.69 - 1.27	0.052		(Bq/L)
Uranium-238	7.03	7.8	A		-9.9	5.46 - 10.14	0.28		(Bq/L)
Zinc-65	70.3	67.3	A		4.5	47.11 - 87.49	2.2		(Bq/L)

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

National Air and Radiation Environmental Laboratory
NARL01
 540 S. Morris Ave.

Montgomery AL 36115

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	39.6	41.4	A		-0.2	15.85 - 67.03	(ug/L)
Hexachloroethane	77.4	75.9	A		0.1	17.71 - 134.18	(ug/L)
Nitrobenzene	55.1	49.4	A		0.7	24.07 - 74.81	(ug/L)
2,4-Dimethylphenol	39.4	72.1	A		-2.0	22.33 - 121.96	(ug/L)
2,4-Dichlorophenol	62.1	61.4	A		0.1	24.84 - 97.98	(ug/L)
1,2,4-Trichlorobenzene	48.0	48	A		0.0	23.74 - 72.26	(ug/L)
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	28.0	32.2	A		-0.5	6.83 - 57.53	(ug/L)
2,6-Dichlorophenol	33.8	37.3	A		-0.5	15.80 - 58.74	(ug/L)
2,6-Dinitrotoluene	38.4	46.2	A		-1.2	26.37 - 66.02	(ug/L)
2,4-Dinitrotoluene	97.1	86.4	A		0.6	35.61 - 137.29	(ug/L)
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	15.2	39.3	A		-1.6	QL - 85.90	(ug/L)
Anthracene	15.7	42.6	A		-1.9	0.91 - 84.30	(ug/L)
Pentachlorobenzene	25.3	47.7	A		-1.9	11.94 - 83.38	(ug/L)
Fluoranthene	20.4	41.9	A		-1.6	2.35 - 81.40	(ug/L)
Pyrene	19.8	49.5	A		-1.8	QL - 99.54	(ug/L)
Benzo(a)anthracene	14.1	36.6	A		-1.9	1.23 - 71.95	(ug/L)

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

BWXT Services-Nuclear Environmental Laboratory Service
NESI01 Lynchburg Technology Center
 Lynchburg VA 24504

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.51	1.53	A		-1.3	1.07 - 1.99			(mg/L)
Arsenic	0.256	0.238	A		7.6	0.17 - 0.31			(mg/L)
Barium	2.91	2.86	A		1.7	2.00 - 3.72			(mg/L)
Beryllium	0.000333		A						(mg/L)
Cadmium	0.189	0.191	A		-1.0	0.13 - 0.25			(mg/L)
Chromium	0.390	0.382	A		2.1	0.27 - 0.50			(mg/L)
Copper	4.94	4.77	A		3.6	3.34 - 6.20			(mg/L)
Lead	0.480	0.477	A		0.6	0.33 - 0.62			(mg/L)
Nickel	0.776	0.763	A		1.7	0.53 - 0.99			(mg/L)
Selenium	0.788	0.763	A		3.3	0.53 - 0.99			(mg/L)
Silver	< 0.00900		A						(mg/L)
Thallium	1.12	1.14	A		-1.8	0.80 - 1.48			(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.723	0.716	A		1.0	0.50 - 0.93			(mg/L)
Zinc	0.288	0.314	A		-8.3	0.22 - 0.41			(mg/L)
Americium-241	1.25	1.19	A		5.0	0.83 - 1.55	0.25		(Bq/L)
Cesium-134	23.9	28.5	A		-16.1	19.95 - 37.05	1.7		(Bq/L)
Cesium-137	271	286	A		-5.2	200.20 - 371.80	10		(Bq/L)
Cobalt-57	142	143	A		-0.7	100.10 - 185.90	5		(Bq/L)
Cobalt-60	150	141	A		6.4	98.70 - 183.30	7		(Bq/L)
Iron-55	6.22	9.2	N		-32.4	6.44 - 11.96	1.04		(Bq/L)
Manganese-54	258	246	A		4.9	172.20 - 319.80	21		(Bq/L)
Nickel-63	85.7	88.3	A		-2.9	61.81 - 114.79	14.6		(Bq/L)
Plutonium-238	0.013		A				0.011		(Bq/L)
Plutonium-239/240	2.77	2.99	A		-7.4	2.09 - 3.89	0.26		(Bq/L)
Strontium-90	3.32	4.8	N		-30.8	3.36 - 6.24	0.22		(Bq/L)
Uranium-234/233	1.17	0.98	A		19.4	0.69 - 1.27	0.13		(Bq/L)
Uranium-238	9.20	7.8	A		17.9	5.46 - 10.14	0.77		(Bq/L)
Zinc-65	78.1	67.3	A		16.0	47.11 - 87.49	5.9		(Bq/L)

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

BWXT Services-Nuclear Environmental Laboratory Service
NESI01 Lynchburg Technology Center
 Lynchburg VA 24504

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	43.0	41.4	A		0.2	15.85 - 67.03	(ug/L)
Hexachloroethane	75.6	75.9	A		0.0	17.71 - 134.18	(ug/L)
Nitrobenzene	52.9	49.4	A		0.4	24.07 - 74.81	(ug/L)
2,4-Dimethylphenol	73.9	72.1	A		0.1	22.33 - 121.96	(ug/L)
2,4-Dichlorophenol	69.0	61.4	A		0.6	24.84 - 97.98	(ug/L)
1,2,4-Trichlorobenzene	48.9	48	A		0.1	23.74 - 72.26	(ug/L)
Naphthalene	40.6	38.1	A		0.4	18.38 - 57.75	(ug/L)
Hexachlorobutadiene	30.0	32.2	A		-0.3	6.83 - 57.53	(ug/L)
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	50.0	46.2	A		0.6	26.37 - 66.02	(ug/L)
2,4-Dinitrotoluene	109	86.4	A		1.3	35.61 - 137.29	(ug/L)
Diethylphthalate	44.1	40	A		0.5	16.45 - 63.53	(ug/L)
Hexachlorobenzene	52.2	39.3	A		0.8	QL - 85.90	(ug/L)
Anthracene	54.7	42.6	A		0.9	0.91 - 84.30	(ug/L)
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	54.2	41.9	A		0.9	2.35 - 81.40	(ug/L)
Pyrene	75.2	49.5	A		1.5	QL - 99.54	(ug/L)
Benzo(a)anthracene	45.5	36.6	A		0.8	1.23 - 71.95	(ug/L)

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Nuclear Fuel Services, Inc
NFSI01
 1205 Banner Hill Rd

Erwin TN 37560

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	1.224	1.19	A		2.9	0.83 - 1.55	0.048		(Bq/L)
Cesium-134	NR	28.5				19.95 - 37.05			
Cesium-137	NR	286				200.20 - 371.80			
Cobalt-57	NR	143				100.10 - 185.90			
Cobalt-60	NR	141				98.70 - 183.30			
Manganese-54	NR	246				172.20 - 319.80			
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-238	0.0095		A				0.0065		(Bq/L)
Plutonium-239/240	3.234	2.99	A		8.2	2.09 - 3.89	0.083	L	(Bq/L)
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	1.020	0.98	A		4.1	0.69 - 1.27	0.035		(Bq/L)
Uranium-235	0.170						0.014		(Bq/L)
Uranium-238	8.23	7.8	A		5.5	5.46 - 10.14	0.147	L	(Bq/L)
Zinc-65	NR	67.3				47.11 - 87.49			

- Flags:**
- A = Result acceptable Bias <= 20%
 - W = Result acceptable with warning 20% < Bias <= 30%
 - N = Result not acceptable Bias > 30%
 - L = Uncertainty potentially too low (for information purposes only)
 - H = Uncertainty potentially too high (for information purposes only)
 - QL = Detection Limit
 - RW = Report Warning
 - NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Nuclear Fuel Services, Inc
NFSI01
 1205 Banner Hill Rd

Erwin TN 37560

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

NMLA01 Assaiggi Analytical Laboratories
7300 Jefferson NE
Albuquerque NM 87109

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.63	1.53	A		6.5	1.07 - 1.99			(mg/L)
Arsenic	0.275	0.238	A		15.5	0.17 - 0.31			(mg/L)
Barium	2.75	2.86	A		-3.8	2.00 - 3.72			(mg/L)
Beryllium	<0.0005		A						(mg/L)
Cadmium	0.174	0.191	A		-8.9	0.13 - 0.25			(mg/L)
Chromium	0.399	0.382	A		4.4	0.27 - 0.50			(mg/L)
Copper	4.68	4.77	A		-1.9	3.34 - 6.20			(mg/L)
Lead	0.471	0.477	A		-1.3	0.33 - 0.62			(mg/L)
Nickel	0.813	0.763	A		6.6	0.53 - 0.99			(mg/L)
Selenium	0.754	0.763	A		-1.2	0.53 - 0.99			(mg/L)
Silver	<0.0005		A						(mg/L)
Thallium	1.14	1.14	A		0.0	0.80 - 1.48			(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.733	0.716	A		2.4	0.50 - 0.93			(mg/L)
Zinc	0.291	0.314	A		-7.3	0.22 - 0.41			(mg/L)
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	NR	28.5				19.95 - 37.05			
Cesium-137	NR	286				200.20 - 371.80			
Cobalt-57	NR	143				100.10 - 185.90			
Cobalt-60	NR	141				98.70 - 183.30			
Manganese-54	NR	246				172.20 - 319.80			
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	NR	67.3				47.11 - 87.49			

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Assaiggi Analytical Laboratories
NMLA01 7300 Jefferson NE
 Albuquerque NM 87109

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	40	41.4	A		-0.2	15.85 - 67.03	(ug/L)
Hexachloroethane	74	75.9	A		-0.1	17.71 - 134.18	(ug/L)
Nitrobenzene	49	49.4	A		-0.1	24.07 - 74.81	(ug/L)
2,4-Dimethylphenol	67	72.1	A		-0.3	22.33 - 121.96	(ug/L)
2,4-Dichlorophenol	56	61.4	A		-0.4	24.84 - 97.98	(ug/L)
1,2,4-Trichlorobenzene	47	48	A		-0.1	23.74 - 72.26	(ug/L)
Naphthalene	38	38.1	A		0.0	18.38 - 57.75	(ug/L)
Hexachlorobutadiene	28	32.2	A		-0.5	6.83 - 57.53	(ug/L)
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	44	46.2	A		-0.3	26.37 - 66.02	(ug/L)
2,4-Dinitrotoluene	81	86.4	A		-0.3	35.61 - 137.29	(ug/L)
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	36	39.3	A		-0.2	QL - 85.90	(ug/L)
Anthracene	40	42.6	A		-0.2	0.91 - 84.30	(ug/L)
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	40	41.9	A		-0.1	2.35 - 81.40	(ug/L)
Pyrene	50	49.5	A		0.0	QL - 99.54	(ug/L)
Benzo(a)anthracene	31	36.6	A		-0.5	1.23 - 71.95	(ug/L)

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

NRC Region I
NRCQ01 475 Allendale Road
 King of Prussia PA 19406

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	28.9	28.5	A		1.4	19.95 - 37.05	0.9		(Bq/L)
Cesium-137	269	286	A		-5.9	200.20 - 371.80	7	L	(Bq/L)
Cobalt-57	141	143	A		-1.4	100.10 - 185.90	5		(Bq/L)
Cobalt-60	145	141	A		2.8	98.70 - 183.30	6		(Bq/L)
Manganese-54	263	246	A		6.9	172.20 - 319.80	10		(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	70	67.3	A		4.0	47.11 - 87.49	4		(Bq/L)

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

NRC Region I
NRCQ01 475 Allendale Road

King of Prussia PA 19406

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags:

- A = Result acceptable Z-score ≤ 2.0
- W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
- N = Result not acceptable Z-score > 3.0
- L = Uncertainty potentially too low (for information purposes only)
- H = Uncertainty potentially too high (for information purposes only)
- QL = Detection Limit
- RW = Report Warning
- NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

National Radiation Laboratory
NRLL99
 108 Victoria St
 Christchurch Christchu 8000

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	28.4	28.5	A		-0.4	19.95 - 37.05	1.8		(Bq/L)
Cesium-137	293	286	A		2.4	200.20 - 371.80	18		(Bq/L)
Cobalt-57	151.6	143	A		6.0	100.10 - 185.90	9.4		(Bq/L)
Cobalt-60	145.8	141	A		3.4	98.70 - 183.30	6.7		(Bq/L)
Manganese-54	270	246	A		9.8	172.20 - 319.80	16		(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	70.3	67.3	A		4.5	47.11 - 87.49	4.8		(Bq/L)

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

National Radiation Laboratory
NRLL99
 108 Victoria St
 Christchurch 8000

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags:

- A = Result acceptable Z-score ≤ 2.0
- W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
- N = Result not acceptable Z-score > 3.0
- L = Uncertainty potentially too low (for information purposes only)
- H = Uncertainty potentially too high (for information purposes only)
- QL = Detection Limit
- RW = Report Warning
- NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

O'Brien & Gere Laboratories, Inc.
OBGL01 PO Box 4942
 East Syracuse NY 13221

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.60	1.53	A		4.6	1.07 - 1.99	0.006	L	(mg/L)
Arsenic	0.240	0.238	A		0.8	0.17 - 0.31	0.006	L	(mg/L)
Barium	2.90	2.86	A		1.4	2.00 - 3.72	0.004	L	(mg/L)
Beryllium	<0.01		A				0.006		(mg/L)
Cadmium	0.187	0.191	A		-2.1	0.13 - 0.25	0.004	L	(mg/L)
Chromium	0.383	0.382	A		0.3	0.27 - 0.50	0.006	L	(mg/L)
Copper	4.82	4.77	A		1.0	3.34 - 6.20	0.006	L	(mg/L)
Lead	0.475	0.477	A		-0.4	0.33 - 0.62	0.008	L	(mg/L)
Nickel	0.765	0.763	A		0.3	0.53 - 0.99	0.006	L	(mg/L)
Selenium	0.743	0.763	A		-2.6	0.53 - 0.99	0.006	L	(mg/L)
Silver	<0.01		A				0.001		(mg/L)
Thallium	1.13	1.14	A		-0.9	0.80 - 1.48	0.004	L	(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.723	0.716	A		1.0	0.50 - 0.93	0.004	L	(mg/L)
Zinc	0.282	0.314	A		-10.2	0.22 - 0.41	0.006	L	(mg/L)
Americium-241	1.13E+00	1.19	A		-5.0	0.83 - 1.55	3.32E-01	H	(Bq/L)
Cesium-134	2.62E+01	28.5	A		-8.1	19.95 - 37.05	3.07E+00		(Bq/L)
Cesium-137	2.84E+02	286	A		-0.7	200.20 - 371.80	5.31E+01		(Bq/L)
Cobalt-57	1.48E+02	143	A		3.5	100.10 - 185.90	1.92E+01		(Bq/L)
Cobalt-60	1.49E+02	141	A		5.7	98.70 - 183.30	1.95E+01		(Bq/L)
Manganese-54	2.64E+02	246	A		7.3	172.20 - 319.80	4.83E+01		(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-238	2.02E-02		A				9.49E-03		(Bq/L)
Plutonium-239/240	2.81E+00	2.99	A		-6.0	2.09 - 3.89	8.08E-01	H	(Bq/L)
Strontium-90	4.98E+00	4.8	A		3.8	3.36 - 6.24	1.34E+00	H	(Bq/L)
Uranium-234/233	9.85E-01	0.98	A		0.5	0.69 - 1.27	3.02E-01	H	(Bq/L)
Uranium-238	7.43E+00	7.8	A		-4.7	5.46 - 10.14	2.21E+00	H	(Bq/L)
Zinc-65	7.72E+01	67.3	A		14.7	47.11 - 87.49	1.50E+01		(Bq/L)

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

O'Brien & Gere Laboratories, Inc.
OBGL01 PO Box 4942

East Syracuse NY 13221

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	50	41.4	A		1.0	15.85 - 67.03	(ug/L)
Hexachloroethane	95	75.9	A		1.0	17.71 - 134.18	(ug/L)
Nitrobenzene	56	49.4	A		0.8	24.07 - 74.81	(ug/L)
2,4-Dimethylphenol	91	72.1	A		1.1	22.33 - 121.96	(ug/L)
2,4-Dichlorophenol	74	61.4	A		1.0	24.84 - 97.98	(ug/L)
1,2,4-Trichlorobenzene	58	48	A		1.2	23.74 - 72.26	(ug/L)
Naphthalene	47	38.1	A		1.4	18.38 - 57.75	(ug/L)
Hexachlorobutadiene	36	32.2	A		0.5	6.83 - 57.53	(ug/L)
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	48	46.2	A		0.3	26.37 - 66.02	(ug/L)
2,4-Dinitrotoluene	100	86.4	A		0.8	35.61 - 137.29	(ug/L)
Diethylphthalate	45	40	A		0.6	16.45 - 63.53	(ug/L)
Hexachlorobenzene	43	39.3	A		0.2	QL - 85.90	(ug/L)
Anthracene	50	42.6	A		0.5	0.91 - 84.30	(ug/L)
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	51	41.9	A		0.7	2.35 - 81.40	(ug/L)
Pyrene	57	49.5	A		0.4	QL - 99.54	(ug/L)
Benzo(a)anthracene	41	36.6	A		0.4	1.23 - 71.95	(ug/L)
Chrysene	39		N	False Positive			(ug/L)

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

ORISE/ESSAP
ORIS01 PO Box 117
 Oak Ridge TN 37831

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	1.13	1.19	A		-5.0	0.83 - 1.55	0.10		(Bq/L)
Cesium-134	26.8	28.5	A		-6.0	19.95 - 37.05	0.9		(Bq/L)
Cesium-137	276.7	286	A		-3.3	200.20 - 371.80	3.4	L	(Bq/L)
Cobalt-57	142.9	143	A		-0.1	100.10 - 185.90	4.8		(Bq/L)
Cobalt-60	146.2	141	A		3.7	98.70 - 183.30	4.8		(Bq/L)
Manganese-54	249.0	246	A		1.2	172.20 - 319.80	4.7	L	(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-238	0.02		A				0.01		(Bq/L)
Plutonium-239/240	2.88	2.99	A		-3.7	2.09 - 3.89	0.25		(Bq/L)
Strontium-90	4.84	4.8	A		0.8	3.36 - 6.24	0.39		(Bq/L)
Uranium-234/233	1.00	0.98	A		2.0	0.69 - 1.27	0.13		(Bq/L)
Uranium-238	7.76	7.8	A		-0.5	5.46 - 10.14	0.94		(Bq/L)
Zinc-65	67.5	67.3	A		0.3	47.11 - 87.49	2.7		(Bq/L)

Flags: A = Result acceptable Bias <= 20%
 W = Result acceptable with warning 20% < Bias <= 30%
 N = Result not acceptable Bias > 30%
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

ORISE/ESSAP
ORIS01 PO Box 117
 Oak Ridge TN 37831

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Outreach Technologies, Inc.
OTLI01
 311 N. Aspen

Broken Arrow OK 74012

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.51	1.53	A		-1.3	1.07 - 1.99			(mg/L)
Arsenic	0.244	0.238	A		2.5	0.17 - 0.31			(mg/L)
Barium	2.95	2.86	A		3.1	2.00 - 3.72			(mg/L)
Cadmium	0.191	0.191	A		0.0	0.13 - 0.25			(mg/L)
Chromium	0.391	0.382	A		2.4	0.27 - 0.50			(mg/L)
Copper	4.62	4.77	A		-3.1	3.34 - 6.20			(mg/L)
Lead	0.459	0.477	A		-3.8	0.33 - 0.62			(mg/L)
Nickel	0.680	0.763	A		-10.9	0.53 - 0.99			(mg/L)
Selenium	0.752	0.763	A		-1.4	0.53 - 0.99			(mg/L)
Silver	0.023		A						(mg/L)
Thallium	1.13	1.14	A		-0.9	0.80 - 1.48			(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.796	0.716	A		11.2	0.50 - 0.93			(mg/L)
Zinc	0.290	0.314	A		-7.6	0.22 - 0.41			(mg/L)
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	29.5	28.5	A		3.5	19.95 - 37.05	1.5		(Bq/L)
Cesium-137	329	286	A		15.0	200.20 - 371.80	14		(Bq/L)
Cobalt-57	97.1	143	N		-32.1	100.10 - 185.90	7		(Bq/L)
Cobalt-60	149	141	A		5.7	98.70 - 183.30	5		(Bq/L)
Manganese-54	293	246	A		19.1	172.20 - 319.80	10		(Bq/L)
Nickel-63	103	88.3	A		16.6	61.81 - 114.79	4.52		(Bq/L)
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	6.75	4.8	N		40.6	3.36 - 6.24	0.245		(Bq/L)
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	8.04	7.8	A		3.1	5.46 - 10.14	0.05	L	(Bq/L)
Zinc-65	87.2	67.3	W		29.6	47.11 - 87.49	5		(Bq/L)

Flags: A = Result acceptable Bias <= 20%
 W = Result acceptable with warning 20% < Bias <= 30%
 N = Result not acceptable Bias > 30%
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Outreach Technologies, Inc.
OTLI01 311 N. Aspen
 Broken Arrow OK 74012

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

IT WPRAP Laboratory
PRAP01 Fernald WPRAP Field Office
 Ross Ohio 45061

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	27.71	28.5	A		-2.8	19.95 - 37.05	1.77		(Bq/L)
Cesium-137	272.47	286	A		-4.7	200.20 - 371.80	16.36		(Bq/L)
Cobalt-57	151.59	143	A		6.0	100.10 - 185.90	8.56		(Bq/L)
Cobalt-60	139.87	141	A		-0.8	98.70 - 183.30	7.87		(Bq/L)
Manganese-54	249.43	246	A		1.4	172.20 - 319.80	15.55		(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	1.23	0.98	W		25.5	0.69 - 1.27	0.09		(Bq/L)
Uranium-238	9.08	7.8	A		16.4	5.46 - 10.14	0.38		(Bq/L)
Zinc-65	69.07	67.3	A		2.6	47.11 - 87.49	5.37		(Bq/L)

- Flags:**
- A = Result acceptable Bias <= 20%
 - W = Result acceptable with warning 20% < Bias <= 30%
 - N = Result not acceptable Bias > 30%
 - L = Uncertainty potentially too low (for information purposes only)
 - H = Uncertainty potentially too high (for information purposes only)
 - QL = Detection Limit
 - RW = Report Warning
 - NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

IT WPRAP Laboratory
PRAP01 Fernald WPRAP Field Office
 Ross Ohio 45061

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Severn Trent Laboratories St. Louis
QUAN01 13715 Rider Trail North

Earth City MO 63045

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.47	1.53	A		-3.9	1.07 - 1.99			(mg/L)
Arsenic	0.234	0.238	A		-1.7	0.17 - 0.31			(mg/L)
Barium	3.03	2.86	A		5.9	2.00 - 3.72			(mg/L)
Beryllium	<0.005		A						(mg/L)
Cadmium	0.186	0.191	A		-2.6	0.13 - 0.25			(mg/L)
Chromium	0.368	0.382	A		-3.7	0.27 - 0.50			(mg/L)
Copper	4.92	4.77	A		3.1	3.34 - 6.20			(mg/L)
Lead	0.456	0.477	A		-4.4	0.33 - 0.62			(mg/L)
Nickel	0.728	0.763	A		-4.6	0.53 - 0.99			(mg/L)
Selenium	0.712	0.763	A		-6.7	0.53 - 0.99			(mg/L)
Silver	<0.005		A						(mg/L)
Thallium	1.10	1.14	A		-3.5	0.80 - 1.48			(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.702	0.716	A		-2.0	0.50 - 0.93			(mg/L)
Zinc	0.298	0.314	A		-5.1	0.22 - 0.41			(mg/L)
Americium-241	1.086	1.19	A		-8.7	0.83 - 1.55	0.105		(Bq/L)
Cesium-134	24.2	28.5	A		-15.1	19.95 - 37.05	1.5		(Bq/L)
Cesium-137	260	286	A		-9.1	200.20 - 371.80	16		(Bq/L)
Cobalt-57	134	143	A		-6.3	100.10 - 185.90	7		(Bq/L)
Cobalt-60	138	141	A		-2.1	98.70 - 183.30	7		(Bq/L)
Manganese-54	240	246	A		-2.4	172.20 - 319.80	14		(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-238	0.0180		N	False Positive			0.0032		(Bq/L)
Plutonium-239/240	2.85	2.99	A		-4.7	2.09 - 3.89	0.27		(Bq/L)
Strontium-90	5.03	4.8	A		4.8	3.36 - 6.24	0.51		(Bq/L)
Uranium-234/233	0.930	0.98	A		-5.1	0.69 - 1.27	0.090		(Bq/L)
Uranium-238	7.27	7.8	A		-6.8	5.46 - 10.14	0.68		(Bq/L)
Zinc-65	70.1	67.3	A		4.2	47.11 - 87.49	4.0		(Bq/L)

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Severn Trent Laboratories St. Louis
QUAN01 13715 Rider Trail North

Earth City MO 63045

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	37.1	41.4	A		-0.5	15.85 - 67.03	(ug/L)
Hexachloroethane	65.9	75.9	A		-0.5	17.71 - 134.18	(ug/L)
Nitrobenzene	39.6	49.4	A		-1.2	24.07 - 74.81	(ug/L)
2,4-Dimethylphenol	57.4	72.1	A		-0.9	22.33 - 121.96	(ug/L)
2,4-Dichlorophenol	40.2	61.4	A		-1.7	24.84 - 97.98	(ug/L)
1,2,4-Trichlorobenzene	41.2	48	A		-0.8	23.74 - 72.26	(ug/L)
Naphthalene	33.6	38.1	A		-0.7	18.38 - 57.75	(ug/L)
Hexachlorobutadiene	28.6	32.2	A		-0.4	6.83 - 57.53	(ug/L)
2,6-Dichlorophenol	25.8	37.3	A		-1.6	15.80 - 58.74	(ug/L)
2,6-Dinitrotoluene	42.1	46.2	A		-0.6	26.37 - 66.02	(ug/L)
2,4-Dinitrotoluene	70.6	86.4	A		-0.9	35.61 - 137.29	(ug/L)
Diethylphthalate	37.1	40	A		-0.4	16.45 - 63.53	(ug/L)
Hexachlorobenzene	32.9	39.3	A		-0.4	QL - 85.90	(ug/L)
Anthracene	36.4	42.6	A		-0.4	0.91 - 84.30	(ug/L)
1,2-Dinitrobenzene	19.9		W	False Positive			(ug/L)
Pentachlorobenzene	41.5	47.7	A		-0.5	11.94 - 83.38	(ug/L)
Fluoranthene	32.2	41.9	A		-0.7	2.35 - 81.40	(ug/L)
Pyrene	40.1	49.5	A		-0.6	QL - 99.54	(ug/L)
Benzo(a)anthracene	27.7	36.6	A		-0.8	1.23 - 71.95	(ug/L)

Flags:

A = Result acceptable	Z-score <=2.0)	
W = Result acceptable with warning	2.0 < Z-score <=3.0)	
N = Result not acceptable	Z-score > 3.0)	
L = Uncertainty potentially too low (for infomation purposes only)		
H = Uncertainty potentially too high (for information purposes only)		
QL = Detection Limit		
RW = Report Warning		
NR = Not Reported		

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

STL Knoxville
QUAN02 5815 Middlebrook Pike

Knoxville TN 37921

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.51	1.53	A		-1.3	1.07 - 1.99			(mg/L)
Arsenic	0.230	0.238	A		-3.4	0.17 - 0.31			(mg/L)
Barium	2.89	2.86	A		1.0	2.00 - 3.72			(mg/L)
Beryllium	<0.005		A						(mg/L)
Cadmium	0.188	0.191	A		-1.6	0.13 - 0.25			(mg/L)
Chromium	0.385	0.382	A		0.8	0.27 - 0.50			(mg/L)
Copper	4.78	4.77	A		0.2	3.34 - 6.20			(mg/L)
Lead	0.474	0.477	A		-0.6	0.33 - 0.62			(mg/L)
Nickel	0.753	0.763	A		-1.3	0.53 - 0.99			(mg/L)
Selenium	0.732	0.763	A		-4.1	0.53 - 0.99			(mg/L)
Silver	<0.010		A						(mg/L)
Thallium	1.13	1.14	A		-0.9	0.80 - 1.48			(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.721	0.716	A		0.7	0.50 - 0.93			(mg/L)
Zinc	0.296	0.314	A		-5.7	0.22 - 0.41			(mg/L)
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	NR	28.5				19.95 - 37.05			
Cesium-137	NR	286				200.20 - 371.80			
Cobalt-57	NR	143				100.10 - 185.90			
Cobalt-60	NR	141				98.70 - 183.30			
Manganese-54	NR	246				172.20 - 319.80			
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	NR	67.3				47.11 - 87.49			

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

STL Knoxville
QUAN02 5815 Middlebrook Pike

Knoxville TN 37921

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	52.3	41.4	A		1.3	15.85 - 67.03	(ug/L)
Hexachloroethane	96.7	75.9	A		1.1	17.71 - 134.18	(ug/L)
Nitrobenzene	54.1	49.4	A		0.6	24.07 - 74.81	(ug/L)
2,4-Dimethylphenol	73.0	72.1	A		0.1	22.33 - 121.96	(ug/L)
2,4-Dichlorophenol	66.7	61.4	A		0.4	24.84 - 97.98	(ug/L)
1,2,4-Trichlorobenzene	53.6	48	A		0.7	23.74 - 72.26	(ug/L)
Naphthalene	41.8	38.1	A		0.6	18.38 - 57.75	(ug/L)
Hexachlorobutadiene	36.1	32.2	A		0.5	6.83 - 57.53	(ug/L)
2,6-Dichlorophenol	39.5	37.3	A		0.3	15.80 - 58.74	(ug/L)
2,6-Dinitrotoluene	51.6	46.2	A		0.8	26.37 - 66.02	(ug/L)
2,4-Dinitrotoluene	97.0	86.4	A		0.6	35.61 - 137.29	(ug/L)
Diethylphthalate	43.9	40	A		0.5	16.45 - 63.53	(ug/L)
Hexachlorobenzene	35.5	39.3	A		-0.2	QL - 85.90	(ug/L)
Anthracene	42.1	42.6	A		0.0	0.91 - 84.30	(ug/L)
Pentachlorobenzene	42.9	47.7	A		-0.4	11.94 - 83.38	(ug/L)
Fluoranthene	39.0	41.9	A		-0.2	2.35 - 81.40	(ug/L)
Pyrene	42.9	49.5	A		-0.4	QL - 99.54	(ug/L)
Benzo(a)anthracene	32.6	36.6	A		-0.3	1.23 - 71.95	(ug/L)

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

SEVERN TRENT LABORATORIES - RICHLAND
QUAN03 2800 GEORGE WASHINGTON WAY
 RICHLAND WA 99352

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	1.10	1.19	A		-7.6	0.83 - 1.55	0.0942		(Bq/L)
Cesium-134	25.7	28.5	A		-9.8	19.95 - 37.05	1.90		(Bq/L)
Cesium-137	257.9	286	A		-9.8	200.20 - 371.80	15.2		(Bq/L)
Cobalt-57	142.2	143	A		-0.6	100.10 - 185.90	10.2		(Bq/L)
Cobalt-60	138.4	141	A		-1.8	98.70 - 183.30	8.27		(Bq/L)
Manganese-54	239.4	246	A		-2.7	172.20 - 319.80	14.2		(Bq/L)
Nickel-63	104.0	88.3	A		17.8	61.81 - 114.79	4.13		(Bq/L)
Plutonium-238	0.0181		N	False Positive			0.00458		(Bq/L)
Plutonium-239/240	2.86	2.99	A		-4.3	2.09 - 3.89	0.211		(Bq/L)
Strontium-90	5.11	4.8	A		6.5	3.36 - 6.24	0.592		(Bq/L)
Uranium-234/233	0.956	0.98	A		-2.4	0.69 - 1.27	0.0929		(Bq/L)
Uranium-238	7.46	7.8	A		-4.4	5.46 - 10.14	0.682		(Bq/L)
Zinc-65	66.2	67.3	A		-1.6	47.11 - 87.49	4.84		(Bq/L)

Flags: A = Result acceptable Bias <= 20%
 W = Result acceptable with warning 20% < Bias <= 30%
 N = Result not acceptable Bias > 30%
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

SEVERN TRENT LABORATORIES - RICHLAND
QUAN03 2800 GEORGE WASHINGTON WAY
 RICHLAND WA 99352

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

SIMALABS INTERNATIONAL
RECC01 6954 Cornell Rd. Suite 300
 Cincinnati OH 45242

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.2	1.53	W		-21.6	1.07 - 1.99			(mg/L)
Arsenic	0.23	0.238	A		-3.4	0.17 - 0.31			(mg/L)
Barium	2.6	2.86	A		-9.1	2.00 - 3.72			(mg/L)
Cadmium	0.19	0.191	A		-0.5	0.13 - 0.25			(mg/L)
Chromium	0.38	0.382	A		-0.5	0.27 - 0.50			(mg/L)
Copper	4.3	4.77	A		-9.9	3.34 - 6.20			(mg/L)
Lead	0.50	0.477	A		4.8	0.33 - 0.62			(mg/L)
Nickel	0.74	0.763	A		-3.0	0.53 - 0.99			(mg/L)
Selenium	0.72	0.763	A		-5.6	0.53 - 0.99			(mg/L)
Thallium	1.2	1.14	A		5.3	0.80 - 1.48			(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.67	0.716	A		-6.4	0.50 - 0.93			(mg/L)
Zinc	0.32	0.314	A		1.9	0.22 - 0.41			(mg/L)
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	NR	28.5				19.95 - 37.05			
Cesium-137	NR	286				200.20 - 371.80			
Cobalt-57	NR	143				100.10 - 185.90			
Cobalt-60	NR	141				98.70 - 183.30			
Manganese-54	NR	246				172.20 - 319.80			
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	NR	67.3				47.11 - 87.49			

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

SIMALABS INTERNATIONAL
RECC01 6954 Cornell Rd. Suite 300

Cincinnati OH 45242

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	34.1	41.4	A		-0.9	15.85 - 67.03	(ug/L)
Hexachloroethane	58.8	75.9	A		-0.9	17.71 - 134.18	(ug/L)
Nitrobenzene	42.7	49.4	A		-0.8	24.07 - 74.81	(ug/L)
2,4-Dimethylphenol	69.5	72.1	A		-0.2	22.33 - 121.96	(ug/L)
2,4-Dichlorophenol	56.6	61.4	A		-0.4	24.84 - 97.98	(ug/L)
1,2,4-Trichlorobenzene	40.2	48	A		-1.0	23.74 - 72.26	(ug/L)
Naphthalene	33.2	38.1	A		-0.7	18.38 - 57.75	(ug/L)
Hexachlorobutadiene	24.2	32.2	A		-0.9	6.83 - 57.53	(ug/L)
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	48.9	46.2	A		0.4	26.37 - 66.02	(ug/L)
2,4-Dinitrotoluene	98.0	86.4	A		0.7	35.61 - 137.29	(ug/L)
Diethylphthalate	45.3	40	A		0.7	16.45 - 63.53	(ug/L)
Hexachlorobenzene	48.0	39.3	A		0.6	QL - 85.90	(ug/L)
Anthracene	50.0	42.6	A		0.5	0.91 - 84.30	(ug/L)
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	51.7	41.9	A		0.7	2.35 - 81.40	(ug/L)
Pyrene	51.7	49.5	A		0.1	QL - 99.54	(ug/L)
Benzo(a)anthracene	51.1	36.6	A		1.2	1.23 - 71.95	(ug/L)

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

RFETS SSOC Radiological Labs
ROCK01 10808 Hwy 93 Unit B

Golden CO 80403

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.575	1.53	A		2.9	1.07 - 1.99			(mg/L)
Arsenic	.239	0.238	A		0.4	0.17 - 0.31			(mg/L)
Barium	2.912	2.86	A		1.8	2.00 - 3.72			(mg/L)
Beryllium	<.005		A						(mg/L)
Cadmium	.204	0.191	A		6.8	0.13 - 0.25			(mg/L)
Chromium	.390	0.382	A		2.1	0.27 - 0.50			(mg/L)
Copper	4.577	4.77	A		-4.0	3.34 - 6.20			(mg/L)
Lead	.486	0.477	A		1.9	0.33 - 0.62			(mg/L)
Nickel	.766	0.763	A		0.4	0.53 - 0.99			(mg/L)
Selenium	.809	0.763	A		6.0	0.53 - 0.99			(mg/L)
Silver	<.03		A						(mg/L)
Thallium	1.190	1.14	A		4.4	0.80 - 1.48			(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	.702	0.716	A		-2.0	0.50 - 0.93			(mg/L)
Zinc	.292	0.314	A		-7.0	0.22 - 0.41			(mg/L)
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	NR	28.5				19.95 - 37.05			
Cesium-137	NR	286				200.20 - 371.80			
Cobalt-57	NR	143				100.10 - 185.90			
Cobalt-60	NR	141				98.70 - 183.30			
Manganese-54	NR	246				172.20 - 319.80			
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	NR	67.3				47.11 - 87.49			

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

RFETS SSOC Radiological Labs
ROCK01 10808 Hwy 93 Unit B

Golden CO 80403

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

RSA Laboratories, Inc.
RSAL01 PO Box 61
 Hebron CT 06248

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	65.96	28.5	N		131.4	19.95 - 37.05	2.21		(Bq/L)
Cesium-137	677.18	286	N		136.8	200.20 - 371.80	16.86	L	(Bq/L)
Cobalt-57	338.81	143	N		136.9	100.10 - 185.90	8.50	L	(Bq/L)
Cobalt-60	368.96	141	N		161.7	98.70 - 183.30	9.54	L	(Bq/L)
Manganese-54	652.29	246	N		165.2	172.20 - 319.80	16.44	L	(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-238	.02		A				.02		(Bq/L)
Plutonium-239/240	5.86	2.99	N		96.0	2.09 - 3.89	.85		(Bq/L)
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	1.54	0.98	N		57.1	0.69 - 1.27	.27		(Bq/L)
Uranium-238	10.3	7.8	N		32.1	5.46 - 10.14	1.44		(Bq/L)
Zinc-65	189.03	67.3	N		180.9	47.11 - 87.49	6.32		(Bq/L)

Flags: A = Result acceptable Bias <= 20%
 W = Result acceptable with warning 20% < Bias <= 30%
 N = Result not acceptable Bias > 30%
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

RSA Laboratories, Inc.
RSAL01 PO Box 61
 Hebron CT 06248

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

RSIR99 Instituto de Radioprotecao e Dosimetria
Avenida Salvador Allende S/no.

Rio de Janeiro Rio de Ja 22780

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	0.537	0.628	A		-14.5	0.44 - 0.82	0.040		(mg/L)
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	25.700	28.5	A		-9.8	19.95 - 37.05	1.569		(Bq/L)
Cesium-137	268.167	286	A		-6.2	200.20 - 371.80	15.840		(Bq/L)
Cobalt-57	122.77	143	A		-14.1	100.10 - 185.90	7.327		(Bq/L)
Cobalt-60	138.700	141	A		-1.6	98.70 - 183.30	8.160		(Bq/L)
Manganese-54	247.100	246	A		0.4	172.20 - 319.80	14.611		(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-238	0.076		N	False Positive			0.022		(Bq/L)
Plutonium-239/240	2.933	2.99	A		-1.9	2.09 - 3.89	0.198		(Bq/L)
Strontium-90	4.377	4.8	A		-8.8	3.36 - 6.24	0.290		(Bq/L)
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	67.800	67.3	A		0.7	47.11 - 87.49	4.212		(Bq/L)

- Flags:** A = Result acceptable Bias <= 20%
W = Result acceptable with warning 20% < Bias <= 30%
N = Result not acceptable Bias > 30%
L = Uncertainty potentially too low (for information purposes only)
H = Uncertainty potentially too high (for information purposes only)
QL = Detection Limit
RW = Report Warning
NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

RSIR99 Instituto de Radioproteção e Dosimetria
Avenida Salvador Allende S/no.

Rio de Janeiro Rio de Ja 22780

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags:	A = Result acceptable	Z-score <=2.0)
	W = Result acceptable with warning	2.0 < Z-score <=3.0)
	N = Result not acceptable	Z-score > 3.0)
	L = Uncertainty potentially too low (for information purposes only)	
	H = Uncertainty potentially too high (for information purposes only)	
	QL = Detection Limit	
	RW = Report Warning	
	NR = Not Reported	

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

WSRC/SAVANNAH RIVER TECHNOLOGY CENTER/A
SAVA01 773-A, room B125

AIKEN SC 29802

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.54	1.53	A		0.7	1.07 - 1.99	0.154		(mg/L)
Arsenic	0.263	0.238	A		10.5	0.17 - 0.31	0.006	L	(mg/L)
Barium	2.81	2.86	A		-1.7	2.00 - 3.72	0.28		(mg/L)
Cadmium	0.188	0.191	A		-1.6	0.13 - 0.25	0.019		(mg/L)
Chromium	0.379	0.382	A		-0.8	0.27 - 0.50	0.038		(mg/L)
Copper	4.82	4.77	A		1.0	3.34 - 6.20	0.482		(mg/L)
Lead	0.507	0.477	A		6.3	0.33 - 0.62	0.051		(mg/L)
Nickel	0.726	0.763	A		-4.8	0.53 - 0.99	0.073		(mg/L)
Selenium	0.893	0.763	A		17.0	0.53 - 0.99	0.008	L	(mg/L)
Thallium	1.17	1.14	A		2.6	0.80 - 1.48	0.117		(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.673	0.716	A		-6.0	0.50 - 0.93	0.067		(mg/L)
Zinc	0.286	0.314	A		-8.9	0.22 - 0.41	0.029		(mg/L)
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	2.87E+01	28.5	A		0.7	19.95 - 37.05	1.33E+00		(Bq/L)
Cesium-137	2.88E+02	286	A		0.7	200.20 - 371.80	5.23E+00	L	(Bq/L)
Cobalt-57	1.48E+02	143	A		3.5	100.10 - 185.90	3.66E+00	L	(Bq/L)
Cobalt-60	1.54E+02	141	A		9.2	98.70 - 183.30	2.01E+00	L	(Bq/L)
Manganese-54	2.63E+02	246	A		6.9	172.20 - 319.80	4.52E+00	L	(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	7.15E+01	67.3	A		6.2	47.11 - 87.49	3.53E+00		(Bq/L)

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

WSRC/SAVANNAH RIVER TECHNOLOGY CENTER/A
SAVA01 773-A, room B125

AIKEN SC 29802

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Sanford Cohen and Associates, Inc.
SCAL01
 1000 Monticello Court

Montgomery AL 36117

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	1.173	1.19	A		-1.4	0.83 - 1.55	0.146		(Bq/L)
Cesium-134	25.6	28.5	A		-10.2	19.95 - 37.05	1.88		(Bq/L)
Cesium-137	264	286	A		-7.7	200.20 - 371.80	18.5		(Bq/L)
Cobalt-57	142	143	A		-0.7	100.10 - 185.90	9.8		(Bq/L)
Cobalt-60	146	141	A		3.5	98.70 - 183.30	10.5		(Bq/L)
Manganese-54	259	246	A		5.3	172.20 - 319.80	18		(Bq/L)
Nickel-63	91.6	88.3	A		3.7	61.81 - 114.79	9.2		(Bq/L)
Plutonium-238	0.013		A				0.005		(Bq/L)
Plutonium-239/240	2.84	2.99	A		-5.0	2.09 - 3.89	0.340		(Bq/L)
Strontium-90	3.68	4.8	W		-23.3	3.36 - 6.24	0.391		(Bq/L)
Uranium-234/233	1.132	0.98	A		15.5	0.69 - 1.27	0.147		(Bq/L)
Uranium-238	8.29	7.8	A		6.3	5.46 - 10.14	0.994		(Bq/L)
Zinc-65	75.6	67.3	A		12.3	47.11 - 87.49	5.51		(Bq/L)

Flags: A = Result acceptable Bias <= 20%
 W = Result acceptable with warning 20% < Bias <= 30%
 N = Result not acceptable Bias > 30%
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Sanford Cohen and Associates, Inc.

SCAL01

1000 Monticello Court

Montgomery

AL

36117

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0

W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$

N = Result not acceptable Z-score > 3.0

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Saxton Nuclear Experimental Corp
SNEC01 165 Power Plant Road

Saxton PA 16678

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	24.81	28.5	A		-12.9	19.95 - 37.05	0.85		(Bq/L)
Cesium-137	264.52	286	A		-7.5	200.20 - 371.80	16.38		(Bq/L)
Cobalt-57	140.42	143	A		-1.8	100.10 - 185.90	5.62		(Bq/L)
Cobalt-60	138.08	141	A		-2.1	98.70 - 183.30	5.36		(Bq/L)
Manganese-54	244.75	246	A		-0.5	172.20 - 319.80	15.38		(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	71.00	67.3	A		5.5	47.11 - 87.49	4.12		(Bq/L)

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Saxton Nuclear Experimental Corp
SNEC01
 165 Power Plant Road

Saxton PA 16678

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

SNLP01 SNL Environmental Restoration Chemistry Laboratory
Sandia National Laboratories
Albuquerque NM 87185

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.65	1.53	A		7.8	1.07 - 1.99			(mg/L)
Arsenic	0.23	0.238	A		-3.4	0.17 - 0.31			(mg/L)
Barium	3.18	2.86	A		11.2	2.00 - 3.72			(mg/L)
Beryllium	0.0002		A						(mg/L)
Cadmium	0.20	0.191	A		4.7	0.13 - 0.25			(mg/L)
Chromium	0.42	0.382	A		9.9	0.27 - 0.50			(mg/L)
Copper	5.12	4.77	A		7.3	3.34 - 6.20			(mg/L)
Lead	0.52	0.477	A		9.0	0.33 - 0.62			(mg/L)
Nickel	0.85	0.763	A		11.4	0.53 - 0.99			(mg/L)
Selenium	0.69	0.763	A		-9.6	0.53 - 0.99			(mg/L)
Silver	0.0006		A						(mg/L)
Thallium	0.25	1.14	N		-78.1	0.80 - 1.48			(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.79	0.716	A		10.3	0.50 - 0.93			(mg/L)
Zinc	0.31	0.314	A		-1.3	0.22 - 0.41			(mg/L)
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	NR	28.5				19.95 - 37.05			
Cesium-137	NR	286				200.20 - 371.80			
Cobalt-57	NR	143				100.10 - 185.90			
Cobalt-60	NR	141				98.70 - 183.30			
Manganese-54	NR	246				172.20 - 319.80			
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	NR	67.3				47.11 - 87.49			

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

SNLP01 SNL Environmental Restoration Chemistry Laboratory
 Sandia National Laboratories
 Albuquerque NM 87185

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

SOUT01 Southwest Research Institute
6220 Culebra Rd.

San Antonio TX 78228

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.52	1.53	A		-0.7	1.07 - 1.99	0.08		(mg/L)
Arsenic	0.230	0.238	A		-3.4	0.17 - 0.31	0.012		(mg/L)
Barium	2.93	2.86	A		2.4	2.00 - 3.72	0.15		(mg/L)
Cadmium	0.192	0.191	A		0.5	0.13 - 0.25	0.010		(mg/L)
Chromium	0.377	0.382	A		-1.3	0.27 - 0.50	0.020		(mg/L)
Copper	4.75	4.77	A		-0.4	3.34 - 6.20	0.25		(mg/L)
Lead	0.481	0.477	A		0.8	0.33 - 0.62	0.025		(mg/L)
Nickel	0.746	0.763	A		-2.2	0.53 - 0.99	0.039		(mg/L)
Selenium	0.705	0.763	A		-7.6	0.53 - 0.99	0.037		(mg/L)
Thallium	1.15	1.14	A		0.9	0.80 - 1.48	0.06		(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.731	0.716	A		2.1	0.50 - 0.93	0.038		(mg/L)
Zinc	0.275	0.314	A		-12.4	0.22 - 0.41	0.014		(mg/L)
Americium-241	1.202	1.19	A		1.0	0.83 - 1.55	.08268		(Bq/L)
Cesium-134	25.74	28.5	A		-9.7	19.95 - 37.05	3.01		(Bq/L)
Cesium-137	283.5	286	A		-0.9	200.20 - 371.80	30.5		(Bq/L)
Cobalt-57	143.6	143	A		0.4	100.10 - 185.90	15.9		(Bq/L)
Cobalt-60	147.3	141	A		4.5	98.70 - 183.30	15.6		(Bq/L)
Manganese-54	259.2	246	A		5.4	172.20 - 319.80	27.3		(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-238	.02599		A				.009426		(Bq/L)
Plutonium-239/240	2.931	2.99	A		-2.0	2.09 - 3.89	.2563		(Bq/L)
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	.7167	0.98	W		-26.9	0.69 - 1.27	.07522		(Bq/L)
Uranium-238	7.041	7.8	A		-9.7	5.46 - 10.14	.3981		(Bq/L)
Zinc-65	73.69	67.3	A		9.5	47.11 - 87.49	8.12		(Bq/L)

Flags: A = Result acceptable Bias <= 20%
 W = Result acceptable with warning 20% < Bias <= 30%
 N = Result not acceptable Bias > 30%
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Southwest Research Institute
SOUT01
 6220 Culebra Rd.

San Antonio TX 78228

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	24.75	41.4	A		-2.0	15.85 - 67.03	(ug/L)
Hexachloroethane	54.5	75.9	A		-1.1	17.71 - 134.18	(ug/L)
Nitrobenzene	42.75	49.4	A		-0.8	24.07 - 74.81	(ug/L)
2,4-Dimethylphenol	82.5	72.1	A		0.6	22.33 - 121.96	(ug/L)
2,4-Dichlorophenol	54.5	61.4	A		-0.6	24.84 - 97.98	(ug/L)
1,2,4-Trichlorobenzene	37.75	48	A		-1.3	23.74 - 72.26	(ug/L)
Naphthalene	32.25	38.1	A		-0.9	18.38 - 57.75	(ug/L)
Hexachlorobutadiene	21.5	32.2	A		-1.3	6.83 - 57.53	(ug/L)
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	38.25	46.2	A		-1.2	26.37 - 66.02	(ug/L)
2,4-Dinitrotoluene	64	86.4	A		-1.3	35.61 - 137.29	(ug/L)
Diethylphthalate	28.5	40	A		-1.5	16.45 - 63.53	(ug/L)
Hexachlorobenzene	25.25	39.3	A		-0.9	QL - 85.90	(ug/L)
Anthracene	29.75	42.6	A		-0.9	0.91 - 84.30	(ug/L)
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	26	41.9	A		-1.2	2.35 - 81.40	(ug/L)
Pyrene	33.25	49.5	A		-1.0	QL - 99.54	(ug/L)
Benzo(a)anthracene	23	36.6	A		-1.2	1.23 - 71.95	(ug/L)

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

SOUTHWEST LABORATORY OF OKLAHOMA, INC.
SWOL01 1700 WEST ALBANY

BROKEN ARROW OK 74012

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.56	1.53	A		2.0	1.07 - 1.99			(mg/L)
Arsenic	0.229	0.238	A		-3.8	0.17 - 0.31			(mg/L)
Barium	2.92	2.86	A		2.1	2.00 - 3.72			(mg/L)
Cadmium	0.189	0.191	A		-1.0	0.13 - 0.25			(mg/L)
Chromium	0.383	0.382	A		0.3	0.27 - 0.50			(mg/L)
Copper	4.82	4.77	A		1.0	3.34 - 6.20			(mg/L)
Lead	0.473	0.477	A		-0.8	0.33 - 0.62			(mg/L)
Nickel	0.763	0.763	A		0.0	0.53 - 0.99			(mg/L)
Selenium	0.703	0.763	A		-7.9	0.53 - 0.99			(mg/L)
Thallium	1.13	1.14	A		-0.9	0.80 - 1.48			(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.718	0.716	A		0.3	0.50 - 0.93			(mg/L)
Zinc	0.273	0.314	A		-13.1	0.22 - 0.41			(mg/L)
Americium-241	1.254	1.19	A		5.4	0.83 - 1.55	0.033	L	(Bq/L)
Cesium-134	24	28.5	A		-15.8	19.95 - 37.05	1.0		(Bq/L)
Cesium-137	271	286	A		-5.2	200.20 - 371.80	11.0		(Bq/L)
Cobalt-57	137	143	A		-4.2	100.10 - 185.90	5.0		(Bq/L)
Cobalt-60	145	141	A		2.8	98.70 - 183.30	3.0	L	(Bq/L)
Manganese-54	252	246	A		2.4	172.20 - 319.80	10.0		(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-238	0.022		N	False Positive			0.006		(Bq/L)
Plutonium-239/240	2.834	2.99	A		-5.2	2.09 - 3.89	0.052	L	(Bq/L)
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	1.036	0.98	A		5.7	0.69 - 1.27	0.074		(Bq/L)
Uranium-238	8.436	7.8	A		8.2	5.46 - 10.14	.185	L	(Bq/L)
Zinc-65	75	67.3	A		11.4	47.11 - 87.49	3.0		(Bq/L)

- Flags:** A = Result acceptable Bias <= 20%
W = Result acceptable with warning 20% < Bias <= 30%
N = Result not acceptable Bias > 30%
L = Uncertainty potentially too low (for information purposes only)
H = Uncertainty potentially too high (for information purposes only)
QL = Detection Limit
RW = Report Warning
NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

SOUTHWEST LABORATORY OF OKLAHOMA, INC.
SWOL01 1700 WEST ALBANY

BROKEN ARROW OK 74012

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	28.7	41.4	A		-1.5	15.85 - 67.03	(ug/L)
Hexachloroethane	52.6	75.9	A		-1.2	17.71 - 134.18	(ug/L)
Nitrobenzene	34.0	49.4	A		-1.8	24.07 - 74.81	(ug/L)
2,4-Dimethylphenol	53.4	72.1	A		-1.1	22.33 - 121.96	(ug/L)
2,4-Dichlorophenol	44.7	61.4	A		-1.4	24.84 - 97.98	(ug/L)
1,2,4-Trichlorobenzene	33.6	48	A		-1.8	23.74 - 72.26	(ug/L)
Naphthalene	27.8	38.1	A		-1.6	18.38 - 57.75	(ug/L)
Hexachlorobutadiene	23.9	32.2	A		-1.0	6.83 - 57.53	(ug/L)
2,6-Dichlorophenol	17.8	37.3	W		-2.7	15.80 - 58.74	(ug/L)
2,6-Dinitrotoluene	30.7	46.2	W		-2.3	26.37 - 66.02	(ug/L)
2,4-Dinitrotoluene	60.3	86.4	A		-1.5	35.61 - 137.29	(ug/L)
Diethylphthalate	30.4	40	A		-1.2	16.45 - 63.53	(ug/L)
Hexachlorobenzene	25.4	39.3	A		-0.9	QL - 85.90	(ug/L)
Anthracene	27.7	42.6	A		-1.1	0.91 - 84.30	(ug/L)
Pentachlorobenzene	34.7	47.7	A		-1.1	11.94 - 83.38	(ug/L)
Fluoranthene	28.7	41.9	A		-1.0	2.35 - 81.40	(ug/L)
Pyrene	34.0	49.5	A		-0.9	QL - 99.54	(ug/L)
Benzo(a)anthracene	26.6	36.6	A		-0.8	1.23 - 71.95	(ug/L)

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

TELEDYNE BROWN ENGINEERING - ENVIRONMENT
TELE01 2508 Quality Lane
 Knoxville TN 37931

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	1.35	1.19	A		13.4	0.83 - 1.55	.15		(Bq/L)
Cesium-134	26.0	28.5	A		-8.8	19.95 - 37.05	1.2		(Bq/L)
Cesium-137	270	286	A		-5.6	200.20 - 371.80	8.7		(Bq/L)
Cobalt-57	141	143	A		-1.4	100.10 - 185.90	3.9	L	(Bq/L)
Cobalt-60	143	141	A		1.4	98.70 - 183.30	3.4	L	(Bq/L)
Manganese-54	253	246	A		2.8	172.20 - 319.80	7.3	L	(Bq/L)
Nickel-63	92.8	88.3	A		5.1	61.81 - 114.79	3.0		(Bq/L)
Plutonium-238	.038		A				.05		(Bq/L)
Plutonium-239/240	2.78	2.99	A		-7.0	2.09 - 3.89	.81	H	(Bq/L)
Strontium-90	4.71	4.8	A		-1.9	3.36 - 6.24	.41		(Bq/L)
Uranium-234/233	1.04	0.98	A		6.1	0.69 - 1.27	.12		(Bq/L)
Uranium-238	8.11	7.8	A		4.0	5.46 - 10.14	.63		(Bq/L)
Zinc-65	NR	67.3				47.11 - 87.49			

Flags: A = Result acceptable Bias <= 20%
 W = Result acceptable with warning 20% < Bias <= 30%
 N = Result not acceptable Bias > 30%
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

TELEDYNE BROWN ENGINEERING - ENVIRONMENT
TELE01 2508 Quality Lane
 Knoxville TN 37931

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Environmental, Inc., Midwest Lab
TELE02 700 Landwehr Road

Northbrook IL 60062

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	1.25	1.19	A		5.0	0.83 - 1.55	0.03	L	(Bq/L)
Cesium-134	25.16	28.5	A		-11.7	19.95 - 37.05	0.23	L	(Bq/L)
Cesium-137	276.96	286	A		-3.2	200.20 - 371.80	0.89	L	(Bq/L)
Cobalt-57	138.9	143	A		-2.9	100.10 - 185.90	0.51	L	(Bq/L)
Cobalt-60	139.10	141	A		-1.3	98.70 - 183.30	0.50	L	(Bq/L)
Iron-55	19.68	9.2	N		113.9	6.44 - 11.96	23.16		(Bq/L)
Manganese-54	253.64	246	A		3.1	172.20 - 319.80	0.91	L	(Bq/L)
Nickel-63	65.88	88.3	W		-25.4	61.81 - 114.79	1.89	L	(Bq/L)
Plutonium-238	0.06		N	False Positive			0.01		(Bq/L)
Plutonium-239/240	2.79	2.99	A		-6.7	2.09 - 3.89	0.04	L	(Bq/L)
Strontium-90	4.88	4.8	A		1.7	3.36 - 6.24	0.29		(Bq/L)
Uranium-234/233	0.89	0.98	A		-9.2	0.69 - 1.27	0.02	L	(Bq/L)
Uranium-238	6.75	7.8	A		-13.5	5.46 - 10.14	0.04	L	(Bq/L)
Zinc-65	70.60	67.3	A		4.9	47.11 - 87.49	1.13	L	(Bq/L)

- Flags:**
- A = Result acceptable Bias <= 20%
 - W = Result acceptable with warning 20% < Bias <= 30%
 - N = Result not acceptable Bias > 30%
 - L = Uncertainty potentially too low (for information purposes only)
 - H = Uncertainty potentially too high (for information purposes only)
 - QL = Detection Limit
 - RW = Report Warning
 - NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Environmental, Inc., Midwest Lab
TELE02 700 Landwehr Road

Northbrook IL 60062

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Eberline Services
TMAE01 7021 Pan American N.E.
 Albuquerque NM 87109

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	1.2	1.19	A		0.8	0.83 - 1.55	0.12		(Bq/L)
Cesium-134	24	28.5	A		-15.8	19.95 - 37.05	1.8		(Bq/L)
Cesium-137	270	286	A		-5.6	200.20 - 371.80	23		(Bq/L)
Cobalt-57	130	143	A		-9.1	100.10 - 185.90	12		(Bq/L)
Cobalt-60	150	141	A		6.4	98.70 - 183.30	11		(Bq/L)
Manganese-54	250	246	A		1.6	172.20 - 319.80	21		(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-238	0.014		A				0.0063		(Bq/L)
Plutonium-239/240	3.0	2.99	A		0.3	2.09 - 3.89	0.41		(Bq/L)
Strontium-90	5.2	4.8	A		8.3	3.36 - 6.24	0.87		(Bq/L)
Uranium-234/233	1.1	0.98	A		12.2	0.69 - 1.27	0.16		(Bq/L)
Uranium-238	8.1	7.8	A		3.8	5.46 - 10.14	1.0		(Bq/L)
Zinc-65	71	67.3	A		5.5	47.11 - 87.49	6.3		(Bq/L)

Flags: A = Result acceptable Bias <= 20%
 W = Result acceptable with warning 20% < Bias <= 30%
 N = Result not acceptable Bias > 30%
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Eberline Services
TMAE01 7021 Pan American N.E.

Albuquerque NM 87109

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

EBERLINE SERVICES OAK RIDGE LABORATORY
TMAO01 601 SCARBORO RD
 OAK RIDGE TN 37830

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	1.16	1.19	A		-2.5	0.83 - 1.55	0.019	L	(Bq/L)
Cesium-134	27.52	28.5	A		-3.4	19.95 - 37.05	2.11		(Bq/L)
Cesium-137	291.36	286	A		1.9	200.20 - 371.80	32.05		(Bq/L)
Cobalt-57	NR	143				100.10 - 185.90			
Cobalt-60	151.97	141	A		7.8	98.70 - 183.30	11.12		(Bq/L)
Manganese-54	269.06	246	A		9.4	172.20 - 319.80	27.27		(Bq/L)
Nickel-63	97.79	88.3	A		10.7	61.81 - 114.79	16.0		(Bq/L)
Plutonium-238	0.000		A				0.03		(Bq/L)
Plutonium-239/240	2.79	2.99	A		-6.7	2.09 - 3.89	0.519		(Bq/L)
Strontium-90	4.86	4.8	A		1.3	3.36 - 6.24	0.13	L	(Bq/L)
Uranium-234/233	1.057	0.98	A		7.9	0.69 - 1.27	0.263	H	(Bq/L)
Uranium-238	7.50	7.8	A		-3.8	5.46 - 10.14	1.38		(Bq/L)
Zinc-65	75.15	67.3	A		11.7	47.11 - 87.49	8.95		(Bq/L)

Flags: A = Result acceptable Bias <= 20%
 W = Result acceptable with warning 20% < Bias <= 30%
 N = Result not acceptable Bias > 30%
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

EBERLINE SERVICES OAK RIDGE LABORATORY
TMAO01 601 SCARBORO RD

OAK RIDGE TN 37830

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Eberline Services
TMAR01 2030 Wright Ave
 Richmond CA 94804

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	0.9985	1.19	A		-16.1	0.83 - 1.55	0.0569		(Bq/L)
Cesium-134	28.73	28.5	A		0.8	19.95 - 37.05	1.57		(Bq/L)
Cesium-137	271.2	286	A		-5.2	200.20 - 371.80	13.6		(Bq/L)
Cobalt-57	137.2	143	A		-4.1	100.10 - 185.90	6.9		(Bq/L)
Cobalt-60	141.5	141	A		0.4	98.70 - 183.30	7.1		(Bq/L)
Iron-55	8.630	9.2	A		-6.2	6.44 - 11.96	1.047		(Bq/L)
Manganese-54	247.9	246	A		0.8	172.20 - 319.80	12.4		(Bq/L)
Nickel-63	83.81	88.3	A		-5.1	61.81 - 114.79	4.27		(Bq/L)
Plutonium-238	0.01102		A				0.01132		(Bq/L)
Plutonium-239/240	2.634	2.99	A		-11.9	2.09 - 3.89	0.142		(Bq/L)
Strontium-90	5.1098	4.8	A		6.5	3.36 - 6.24	0.2693		(Bq/L)
Uranium-234/233	0.9671	0.98	A		-1.3	0.69 - 1.27	0.0861		(Bq/L)
Uranium-238	7.273	7.8	A		-6.8	5.46 - 10.14	0.509		(Bq/L)
Zinc-65	73.96	67.3	A		9.9	47.11 - 87.49	3.95		(Bq/L)

- Flags:**
- A = Result acceptable Bias <= 20%
 - W = Result acceptable with warning 20% < Bias <= 30%
 - N = Result not acceptable Bias > 30%
 - L = Uncertainty potentially too low (for information purposes only)
 - H = Uncertainty potentially too high (for information purposes only)
 - QL = Detection Limit
 - RW = Report Warning
 - NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

TMAR01
 Eberline Services
 2030 Wright Ave
 Richmond CA 94804

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags:

- A = Result acceptable Z-score ≤ 2.0
- W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
- N = Result not acceptable Z-score > 3.0
- L = Uncertainty potentially too low (for information purposes only)
- H = Uncertainty potentially too high (for information purposes only)
- QL = Detection Limit
- RW = Report Warning
- NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

FUSRAP
TNUT01 8945 LATTY AVE
 BERKELEY MO 63134

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	25.13	28.5	A		-11.8	19.95 - 37.05	0.60	L	(Bq/L)
Cesium-137	274.96	286	A		-3.9	200.20 - 371.80	7.93	L	(Bq/L)
Cobalt-57	144.34	143	A		0.9	100.10 - 185.90	2.90	L	(Bq/L)
Cobalt-60	145.08	141	A		2.9	98.70 - 183.30	2.87	L	(Bq/L)
Manganese-54	255.00	246	A		3.7	172.20 - 319.80	6.43	L	(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	0.93	0.98	A		-5.1	0.69 - 1.27	0.11		(Bq/L)
Uranium-238	6.88	7.8	A		-11.8	5.46 - 10.14	0.62		(Bq/L)
Zinc-65	74.70	67.3	A		11.0	47.11 - 87.49	2.50		(Bq/L)

- Flags:**
- A = Result acceptable Bias <= 20%
 - W = Result acceptable with warning 20% < Bias <= 30%
 - N = Result not acceptable Bias > 30%
 - L = Uncertainty potentially too low (for information purposes only)
 - H = Uncertainty potentially too high (for information purposes only)
 - QL = Detection Limit
 - RW = Report Warning
 - NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

FUSRAP
TNUT01 8945 LATTY AVE
BERKELEY MO 63134

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags:	A = Result acceptable	Z-score <=2.0)
	W = Result acceptable with warning	2.0 < Z-score <=3.0)
	N = Result not acceptable	Z-score > 3.0)
	L = Uncertainty potentially too low (for information purposes only)	
	H = Uncertainty potentially too high (for information purposes only)	
	QL = Detection Limit	
	RW = Report Warning	
	NR = Not Reported	

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

LAB.RADIACTIVIDAD AMBIENTAL. UNIV. POLITECNIC
UPVL99 CAMINO DE VERA, 14
 VALENCIA VALENCI 46071

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	1.375	1.19	A		15.5	0.83 - 1.55	0.46	H	(Bq/L)
Cesium-134	26.055	28.5	A		-8.6	19.95 - 37.05	0.71	L	(Bq/L)
Cesium-137	263.89	286	A		-7.7	200.20 - 371.80	2.19	L	(Bq/L)
Cobalt-57	130.07	143	A		-9.0	100.10 - 185.90	1.67	L	(Bq/L)
Cobalt-60	139.78	141	A		-0.9	98.70 - 183.30	2.23	L	(Bq/L)
Manganese-54	250.34	246	A		1.8	172.20 - 319.80	3.52	L	(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-238	0.363		N	False Positive			0.017		(Bq/L)
Plutonium-239/240	3.192	2.99	A		6.8	2.09 - 3.89	0.057	L	(Bq/L)
Strontium-90	4.75	4.8	A		-1.0	3.36 - 6.24	0.29		(Bq/L)
Uranium-234/233	1.392	0.98	N		42.0	0.69 - 1.27	0.043		(Bq/L)
Uranium-238	8.739	7.8	A		12.0	5.46 - 10.14	0.253	L	(Bq/L)
Zinc-65	75.27	67.3	A		11.8	47.11 - 87.49	2.31		(Bq/L)

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

LAB.RADIACTIVIDAD AMBIENTAL. UNIV. POLITECNIC
UPVL99 CAMINO DE VERA, 14
 VALENCIA VALENCI 46071

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

WEST01 Lionville Laboratory Incorporated
208 Welsh Pool Road

Lionville PA 19341

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.43	1.53	A		-6.5	1.07 - 1.99			(mg/L)
Arsenic	0.221	0.238	A		-7.1	0.17 - 0.31			(mg/L)
Barium	2.71	2.86	A		-5.2	2.00 - 3.72			(mg/L)
Beryllium	<0.001		A						(mg/L)
Cadmium	0.177	0.191	A		-7.3	0.13 - 0.25			(mg/L)
Chromium	0.357	0.382	A		-6.5	0.27 - 0.50			(mg/L)
Copper	4.55	4.77	A		-4.6	3.34 - 6.20			(mg/L)
Lead	0.449	0.477	A		-5.9	0.33 - 0.62			(mg/L)
Nickel	0.718	0.763	A		-5.9	0.53 - 0.99			(mg/L)
Selenium	0.707	0.763	A		-7.3	0.53 - 0.99			(mg/L)
Silver	<0.007		A						(mg/L)
Thallium	1.08	1.14	A		-5.3	0.80 - 1.48			(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.672	0.716	A		-6.1	0.50 - 0.93			(mg/L)
Zinc	0.266	0.314	A		-15.3	0.22 - 0.41			(mg/L)
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	NR	28.5				19.95 - 37.05			
Cesium-137	NR	286				200.20 - 371.80			
Cobalt-57	NR	143				100.10 - 185.90			
Cobalt-60	NR	141				98.70 - 183.30			
Manganese-54	NR	246				172.20 - 319.80			
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	NR	67.3				47.11 - 87.49			

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Lionville Laboratory Incorporated
WEST01 208 Welsh Pool Road

Lionville PA 19341

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	52	41.4	A		1.2	15.85 - 67.03	(ug/L)
Hexachloroethane	97	75.9	A		1.1	17.71 - 134.18	(ug/L)
Nitrobenzene	52	49.4	A		0.3	24.07 - 74.81	(ug/L)
2,4-Dimethylphenol	79	72.1	A		0.4	22.33 - 121.96	(ug/L)
2,4-Dichlorophenol	69	61.4	A		0.6	24.84 - 97.98	(ug/L)
1,2,4-Trichlorobenzene	54	48	A		0.7	23.74 - 72.26	(ug/L)
Naphthalene	40	38.1	A		0.3	18.38 - 57.75	(ug/L)
Hexachlorobutadiene	39	32.2	A		0.8	6.83 - 57.53	(ug/L)
2,6-Dichlorophenol	38	37.3	A		0.1	15.80 - 58.74	(ug/L)
2,6-Dinitrotoluene	49	46.2	A		0.4	26.37 - 66.02	(ug/L)
2,4-Dinitrotoluene	87	86.4	A		0.0	35.61 - 137.29	(ug/L)
Diethylphthalate	41	40	A		0.1	16.45 - 63.53	(ug/L)
Hexachlorobenzene	32	39.3	A		-0.5	QL - 85.90	(ug/L)
Anthracene	36	42.6	A		-0.5	0.91 - 84.30	(ug/L)
Pentachlorobenzene	49	47.7	A		0.1	11.94 - 83.38	(ug/L)
Fluoranthene	36	41.9	A		-0.4	2.35 - 81.40	(ug/L)
Pyrene	48	49.5	A		-0.1	QL - 99.54	(ug/L)
Benzo(a)anthracene	30	36.6	A		-0.6	1.23 - 71.95	(ug/L)

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Waste Sampling and Characterization Facility
WEST03 PO Box 1000, S3-30

Richland WA 99352

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.43	1.53	A		-6.5	1.07 - 1.99	0.14		(mg/L)
Arsenic	0.178	0.238	W		-25.2	0.17 - 0.31	0.018		(mg/L)
Barium	2.70	2.86	A		-5.6	2.00 - 3.72	0.27		(mg/L)
Cadmium	0.176	0.191	A		-7.9	0.13 - 0.25	0.018		(mg/L)
Chromium	0.354	0.382	A		-7.3	0.27 - 0.50	0.035		(mg/L)
Copper	4.45	4.77	A		-6.7	3.34 - 6.20	0.45		(mg/L)
Lead	0.421	0.477	A		-11.7	0.33 - 0.62	0.042		(mg/L)
Nickel	0.688	0.763	A		-9.8	0.53 - 0.99	0.069		(mg/L)
Selenium	0.640	0.763	A		-16.1	0.53 - 0.99	0.064		(mg/L)
Thallium	1.11	1.14	A		-2.6	0.80 - 1.48	0.11		(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.683	0.716	A		-4.6	0.50 - 0.93	.068		(mg/L)
Zinc	0.261	0.314	A		-16.9	0.22 - 0.41	0.026		(mg/L)
Americium-241	1.05	1.19	A		-11.8	0.83 - 1.55	0.10		(Bq/L)
Cesium-134	22.5	28.5	W		-21.1	19.95 - 37.05	1.04		(Bq/L)
Cesium-137	270	286	A		-5.6	200.20 - 371.80	18.1		(Bq/L)
Cobalt-57	131	143	A		-8.4	100.10 - 185.90	5.78		(Bq/L)
Cobalt-60	140	141	A		-0.7	98.70 - 183.30	5.48		(Bq/L)
Manganese-54	250	246	A		1.6	172.20 - 319.80	17.2		(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-238	NR		RW						
Plutonium-239/240	2.85	2.99	A		-4.7	2.09 - 3.89	0.27		(Bq/L)
Strontium-90	5.64	4.8	A		17.5	3.36 - 6.24	0.43		(Bq/L)
Uranium-234/233	1.08	0.98	A		10.2	0.69 - 1.27	0.11		(Bq/L)
Uranium-238	7.72	7.8	A		-1.0	5.46 - 10.14	0.73		(Bq/L)
Zinc-65	72.2	67.3	A		7.3	47.11 - 87.49	4.44		(Bq/L)

Flags: A = Result acceptable Bias <= 20%
 W = Result acceptable with warning 20% < Bias <= 30%
 N = Result not acceptable Bias > 30%
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Waste Sampling and Characterization Facility
WEST03 PO Box 1000, S3-30

Richland WA 99352

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	47.7	41.4	A		0.7	15.85 - 67.03	(ug/L)
Hexachloroethane	95.5	75.9	A		1.0	17.71 - 134.18	(ug/L)
Nitrobenzene	59.2	49.4	A		1.2	24.07 - 74.81	(ug/L)
2,4-Dimethylphenol	103	72.1	A		1.9	22.33 - 121.96	(ug/L)
2,4-Dichlorophenol	72.1	61.4	A		0.9	24.84 - 97.98	(ug/L)
1,2,4-Trichlorobenzene	56.0	48	A		1.0	23.74 - 72.26	(ug/L)
Naphthalene	43.0	38.1	A		0.8	18.38 - 57.75	(ug/L)
Hexachlorobutadiene	43.9	32.2	A		1.4	6.83 - 57.53	(ug/L)
2,6-Dichlorophenol	45.1	37.3	A		1.1	15.80 - 58.74	(ug/L)
2,6-Dinitrotoluene	47.6	46.2	A		0.2	26.37 - 66.02	(ug/L)
2,4-Dinitrotoluene	83.0	86.4	A		-0.2	35.61 - 137.29	(ug/L)
Diethylphthalate	47.2	40	A		0.9	16.45 - 63.53	(ug/L)
Hexachlorobenzene	43.8	39.3	A		0.3	QL - 85.90	(ug/L)
Phenanthrene	48.8		N	False Positive			(ug/L)
Anthracene	47.7	42.6	A		0.4	0.91 - 84.30	(ug/L)
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	45.9	41.9	A		0.3	2.35 - 81.40	(ug/L)
Pyrene	55.6	49.5	A		0.4	QL - 99.54	(ug/L)
Benzo(a)anthracene	41.4	36.6	A		0.4	1.23 - 71.95	(ug/L)
Chrysene	41.4		N	False Positive			(ug/L)

Flags: A = Result acceptable Z-score <=2.0)

W = Result acceptable with warning 2.0 < Z-score <=3.0)

N = Result not acceptable Z-score > 3.0)

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

ANTECH LTD WALTZ MILL SITE
WEST04 P.O. BOX 158

MADISON PA 15663

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	1.413	1.53	A		-7.6	1.07 - 1.99			(mg/L)
Arsenic	0.31	0.238	N		30.3	0.17 - 0.31			(mg/L)
Barium	2.71	2.86	A		-5.2	2.00 - 3.72			(mg/L)
Beryllium	<0.1		A						(mg/L)
Cadmium	0.17	0.191	A		-11.0	0.13 - 0.25			(mg/L)
Chromium	0.36	0.382	A		-5.8	0.27 - 0.50			(mg/L)
Copper	4.35	4.77	A		-8.8	3.34 - 6.20			(mg/L)
Lead	0.43	0.477	A		-9.9	0.33 - 0.62			(mg/L)
Nickel	0.62	0.763	A		-18.7	0.53 - 0.99			(mg/L)
Selenium	0.69	0.763	A		-9.6	0.53 - 0.99			(mg/L)
Silver	<0.05		A						(mg/L)
Thallium	1.09	1.14	A		-4.4	0.80 - 1.48			(mg/L)
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	0.67	0.716	A		-6.4	0.50 - 0.93			(mg/L)
Zinc	0.25	0.314	W		-20.4	0.22 - 0.41			(mg/L)
Americium-241	1.44	1.19	W		21.0	0.83 - 1.55	0.28		(Bq/L)
Cesium-134	24.84	28.5	A		-12.8	19.95 - 37.05	0.51	L	(Bq/L)
Cesium-137	249.1	286	A		-12.9	200.20 - 371.80	7.58		(Bq/L)
Cobalt-57	134	143	A		-6.3	100.10 - 185.90	2.88	L	(Bq/L)
Cobalt-60	138.8	141	A		-1.6	98.70 - 183.30	2.37	L	(Bq/L)
Iron-55	13.76	9.2	N		49.6	6.44 - 11.96	60.4		(Bq/L)
Manganese-54	245.6	246	A		-0.2	172.20 - 319.80	6.77	L	(Bq/L)
Nickel-63	26.5	88.3	N		-70.0	61.81 - 114.79	1.3		(Bq/L)
Plutonium-238	0.037		N	False Positive			0.005		(Bq/L)
Plutonium-239/240	2.46	2.99	A		-17.7	2.09 - 3.89	0.20		(Bq/L)
Strontium-90	6.09	4.8	W		26.9	3.36 - 6.24	0.46		(Bq/L)
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	70.19	67.3	A		4.3	47.11 - 87.49	1.93	L	(Bq/L)

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

ANTECH LTD WALTZ MILL SITE
WEST04 P.O. BOX 158

MADISON PA 15663

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Water Resources Research Center
WRR199 Kvassay Jeno ut1
 Budapest H- 1095

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	NR	1.19				0.83 - 1.55			
Cesium-134	27.3	28.5	A		-4.2	19.95 - 37.05	0.7	L	(Bq/L)
Cesium-137	303.8	286	A		6.2	200.20 - 371.80	3.5	L	(Bq/L)
Cobalt-57	143.0	143	A		0.0	100.10 - 185.90	2.8	L	(Bq/L)
Cobalt-60	121.1	141	A		-14.1	98.70 - 183.30	1.8	L	(Bq/L)
Manganese-54	253.5	246	A		3.0	172.20 - 319.80	4.1	L	(Bq/L)
Nickel-63	NR	88.3				61.81 - 114.79			
Plutonium-239/240	NR	2.99				2.09 - 3.89			
Strontium-90	NR	4.8				3.36 - 6.24			
Uranium-234/233	NR	0.98				0.69 - 1.27			
Uranium-238	NR	7.8				5.46 - 10.14			
Zinc-65	62.3	67.3	A		-7.4	47.11 - 87.49	2.3		(Bq/L)

Flags: A = Result acceptable Bias <= 20%

W = Result acceptable with warning 20% < Bias <= 30%

N = Result not acceptable Bias > 30%

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

QL = Detection Limit

RW = Report Warning

NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

Water Resources Research Center
WRR199 Kvassay Jeno ut1
 Budapest H- 1095

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	0.36	38.1	N		-5.7	18.38 - 57.75	(ug/L)
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
Acenaphthylene	<0.01						(ug/L)
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
Acenaphthene	<0.01						(ug/L)
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Fluorene	<0.01						(ug/L)
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Phenanthrene	<0.01						(ug/L)
Anthracene	84.3	42.6	W		3.0	0.91 - 84.30	(ug/L)
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	41	41.9	A		-0.1	2.35 - 81.40	(ug/L)
Pyrene	77.5	49.5	A		1.7	QL - 99.54	(ug/L)
Butylbenzylphthalate	42						(ug/L)
Benzo(a)anthracene	49.7	36.6	A		1.1	1.23 - 71.95	(ug/L)
Chrysene	<0.01						(ug/L)
Benzo(b)fluoranthene	<0.01						(ug/L)
Benzo(k)fluoranthene	<0.01						(ug/L)
Benzo(a)pyrene	<0.01						(ug/L)
Indeno(1,2,3-c,d)pyrene	<0.01						(ug/L)
Dibenzo(a,h)anthracene	<0.01						(ug/L)
Benzo(g,h,i)perylene	<0.01						(ug/L)

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

DUKE ENGINEERING & SERVICES ENVIRONMENTAL
YAEC01 29 Research Drive
 Marlborough MA 01581

Analyte	Result	Ref Value	Flag	Flag Text	Bias (%)	Acceptance Range	Unc Value	Unc. Flag	Units
Antimony	NR	1.53				1.07 - 1.99			
Arsenic	NR	0.238				0.17 - 0.31			
Barium	NR	2.86				2.00 - 3.72			
Cadmium	NR	0.191				0.13 - 0.25			
Chromium	NR	0.382				0.27 - 0.50			
Copper	NR	4.77				3.34 - 6.20			
Lead	NR	0.477				0.33 - 0.62			
Nickel	NR	0.763				0.53 - 0.99			
Selenium	NR	0.763				0.53 - 0.99			
Thallium	NR	1.14				0.80 - 1.48			
Uranium-Total	NR	0.628				0.44 - 0.82			
Uranium-235	NR	0.0012				0.00 - 0.00			
Uranium-238	NR	0.627				0.44 - 0.82			
Vanadium	NR	0.716				0.50 - 0.93			
Zinc	NR	0.314				0.22 - 0.41			
Americium-241	1.152	1.19	A		-3.2	0.83 - 1.55	.026	L	(Bq/L)
Cesium-134	28.26	28.5	A		-0.8	19.95 - 37.05	0.38	L	(Bq/L)
Cesium-137	270.23	286	A		-5.5	200.20 - 371.80	0.78	L	(Bq/L)
Cobalt-57	137.52	143	A		-3.8	100.10 - 185.90	0.36	L	(Bq/L)
Cobalt-60	142.08	141	A		0.8	98.70 - 183.30	0.47	L	(Bq/L)
Manganese-54	247.33	246	A		0.5	172.20 - 319.80	0.81	L	(Bq/L)
Nickel-63	123.85	88.3	N		40.3	61.81 - 114.79	9.85		(Bq/L)
Plutonium-238	0.0456		N	False Positive			0.0060		(Bq/L)
Plutonium-239/240	2.944	2.99	A		-1.5	2.09 - 3.89	0.067	L	(Bq/L)
Strontium-90	3.83	4.8	W		-20.2	3.36 - 6.24	0.32		(Bq/L)
Uranium-234/233	1.014	0.98	A		3.5	0.69 - 1.27	0.039		(Bq/L)
Uranium-238	7.89	7.8	A		1.2	5.46 - 10.14	0.27		(Bq/L)
Zinc-65	70.58	67.3	A		4.9	47.11 - 87.49	0.87	L	(Bq/L)

- Flags:** A = Result acceptable Bias <= 20%
 W = Result acceptable with warning 20% < Bias <= 30%
 N = Result not acceptable Bias > 30%
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

Mixed Analyte Performance Evaluation Program

Laboratory Results

Sample ID: MAPEP-01-W9

DUKE ENGINEERING & SERVICES ENVIRONMENTAL
YAEC01 29 Research Drive
 Marlborough MA 01581

Analyte	Result	Ref Value	Flag	Flag Text	Z Score	Acceptance Range	Units
1,3-Dichlorobenzene	NR	41.4				15.85 - 67.03	
Hexachloroethane	NR	75.9				17.71 - 134.18	
Nitrobenzene	NR	49.4				24.07 - 74.81	
2,4-Dimethylphenol	NR	72.1				22.33 - 121.96	
2,4-Dichlorophenol	NR	61.4				24.84 - 97.98	
1,2,4-Trichlorobenzene	NR	48				23.74 - 72.26	
Naphthalene	NR	38.1				18.38 - 57.75	
Hexachlorobutadiene	NR	32.2				6.83 - 57.53	
2,6-Dichlorophenol	NR	37.3				15.80 - 58.74	
2,6-Dinitrotoluene	NR	46.2				26.37 - 66.02	
2,4-Dinitrotoluene	NR	86.4				35.61 - 137.29	
Diethylphthalate	NR	40				16.45 - 63.53	
Hexachlorobenzene	NR	39.3				QL - 85.90	
Anthracene	NR	42.6				0.91 - 84.30	
Pentachlorobenzene	NR	47.7				11.94 - 83.38	
Fluoranthene	NR	41.9				2.35 - 81.40	
Pyrene	NR	49.5				QL - 99.54	
Benzo(a)anthracene	NR	36.6				1.23 - 71.95	

Flags: A = Result acceptable Z-score ≤ 2.0
 W = Result acceptable with warning $2.0 < \text{Z-score} \leq 3.0$
 N = Result not acceptable Z-score > 3.0
 L = Uncertainty potentially too low (for information purposes only)
 H = Uncertainty potentially too high (for information purposes only)
 QL = Detection Limit
 RW = Report Warning
 NR = Not Reported

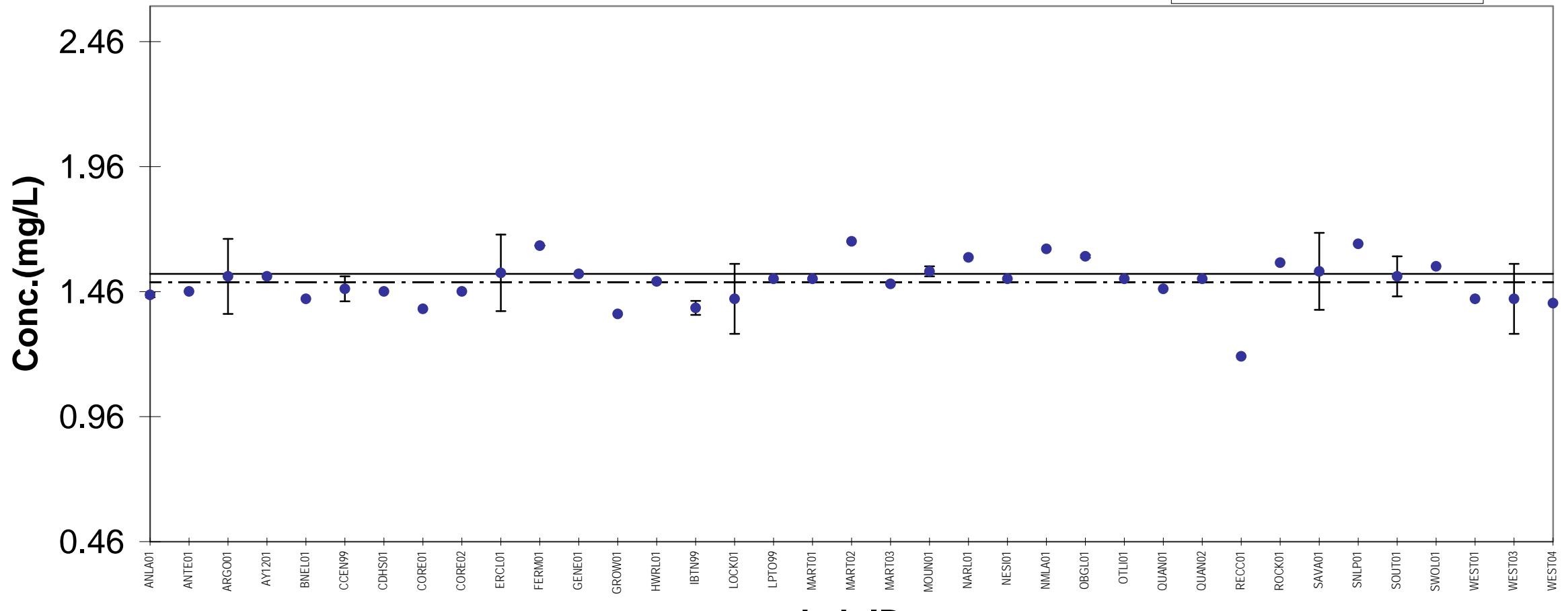
APPENDIX

C

**Graphics of Data Gathered from Water
Sample MAPEP-01-W9**

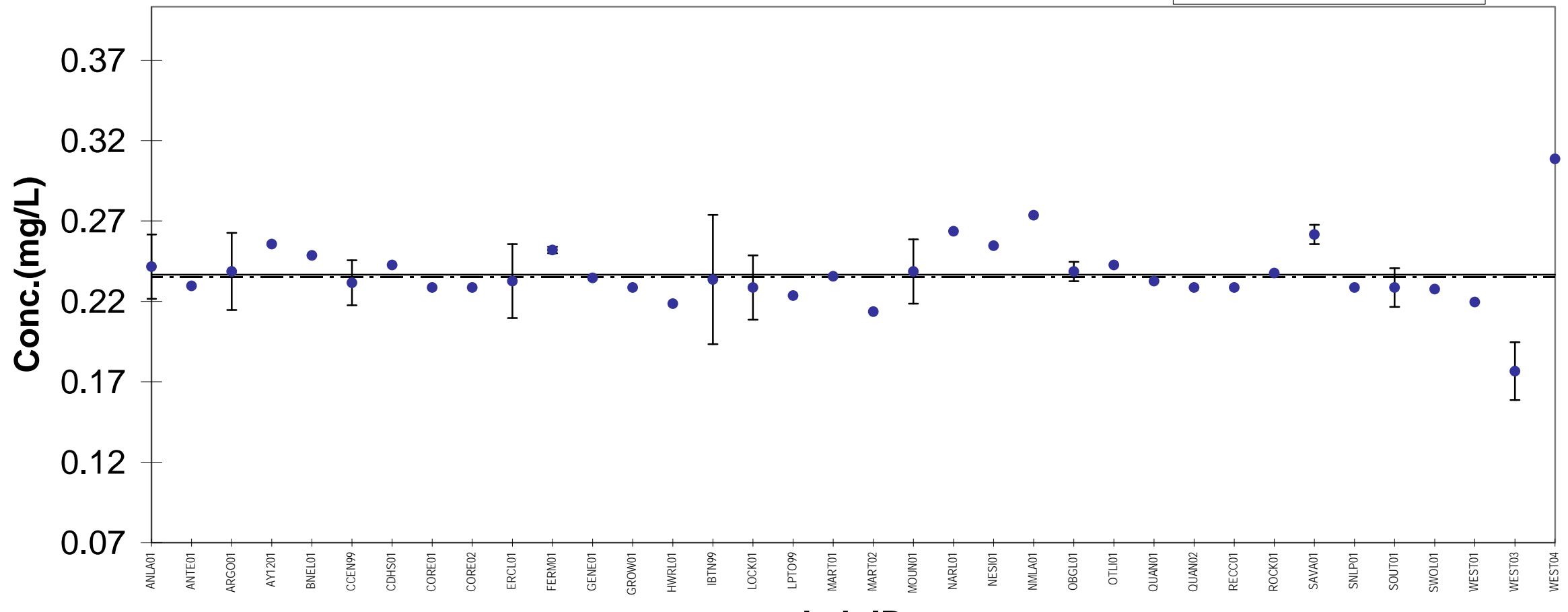
Antimony MAPEP-01-W9

• Lab Result
— Ref. Value 1.53
- - - Mean 1.49



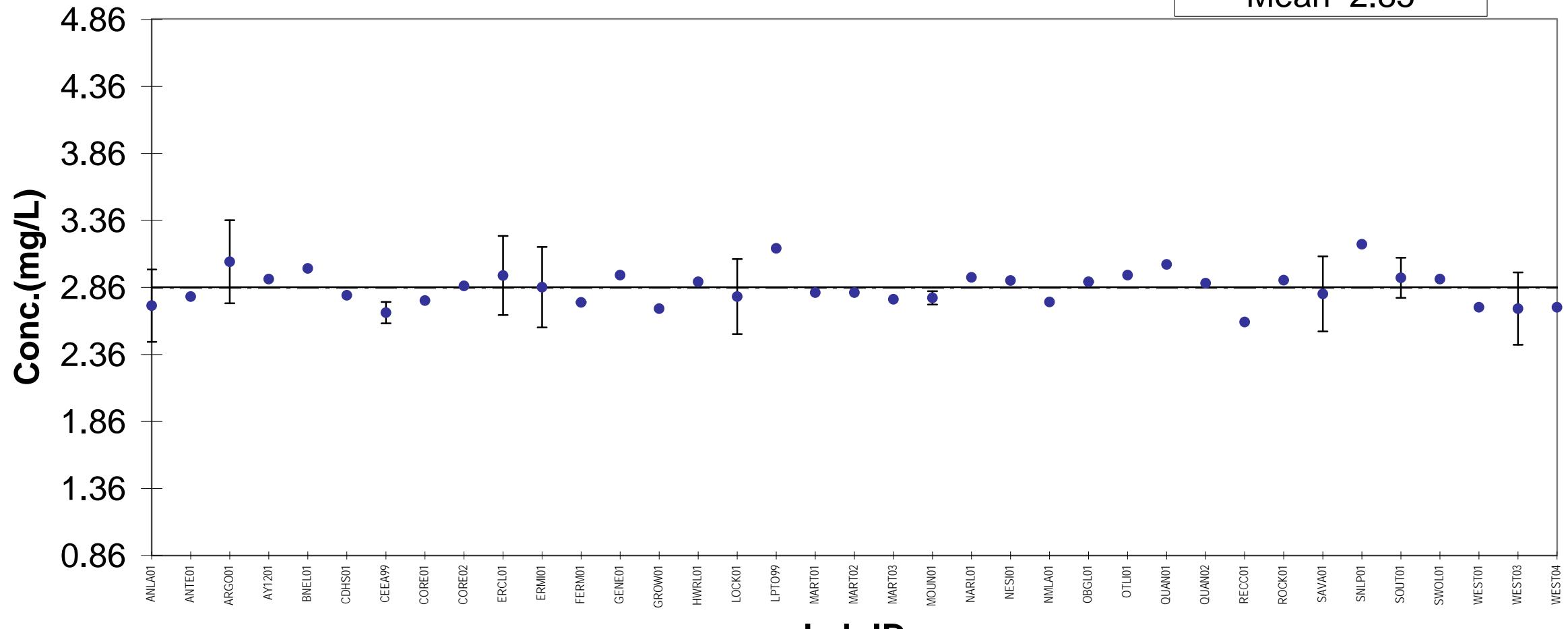
Arsenic MAPEP-01-W9

• Lab Result
— Ref. Value 0.23
- - - Mean 0.23



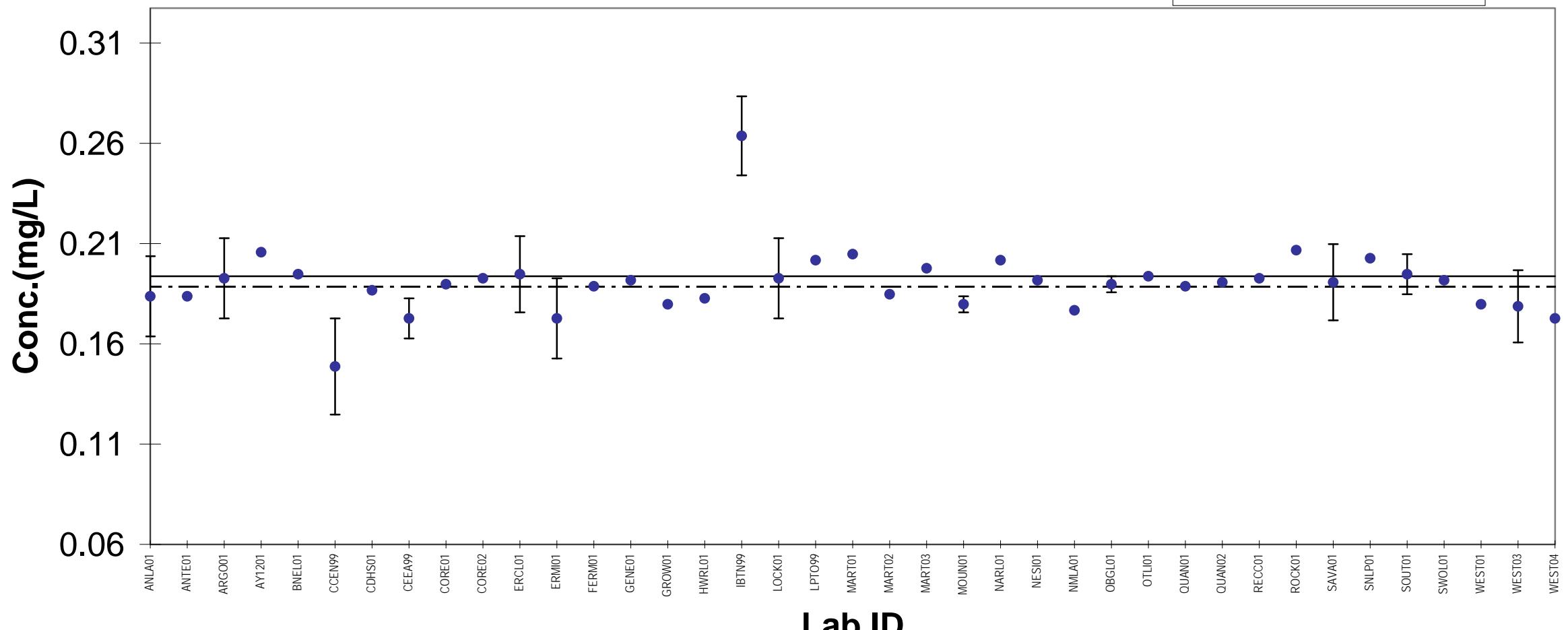
Barium MAPEP-01-W9

• Lab Result
— Ref. Value 2.86
- - - Mean 2.85



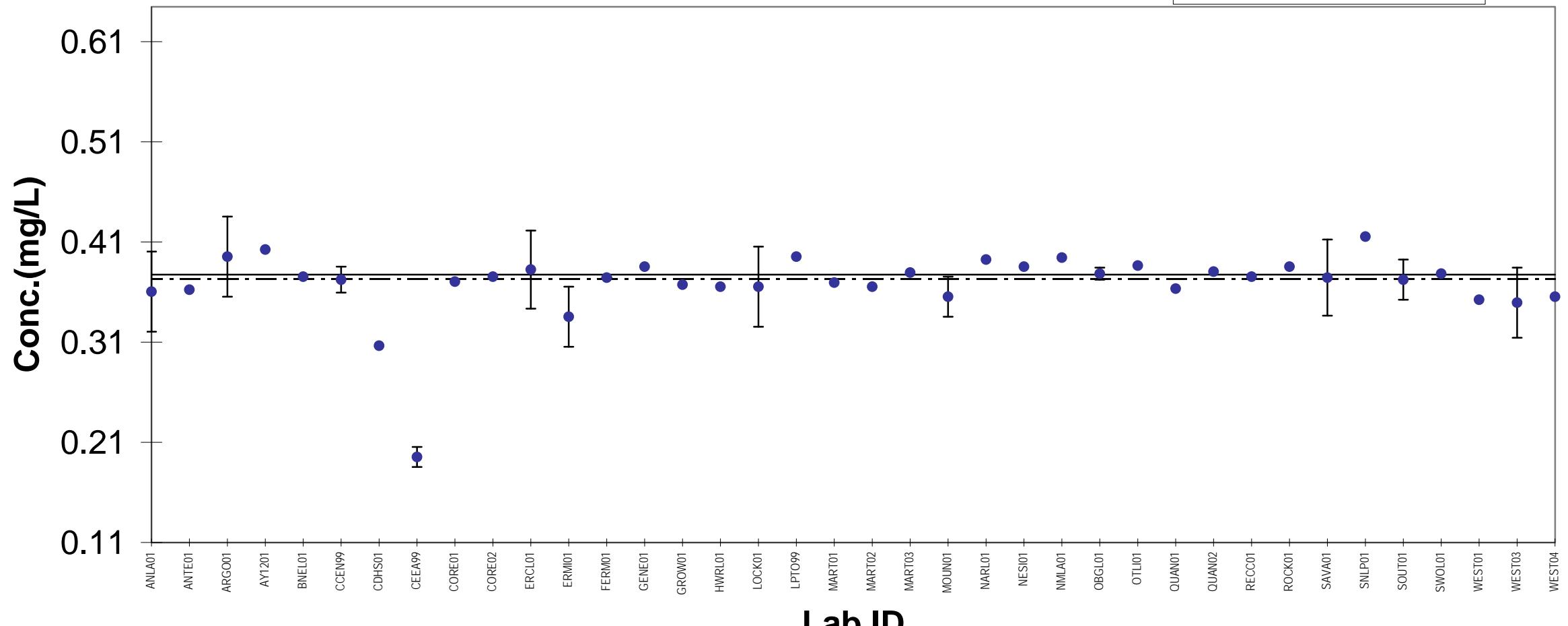
Cadmium MAPEP-01-W9

• Lab Result
— Ref. Value 0.19
- - - Mean 0.18



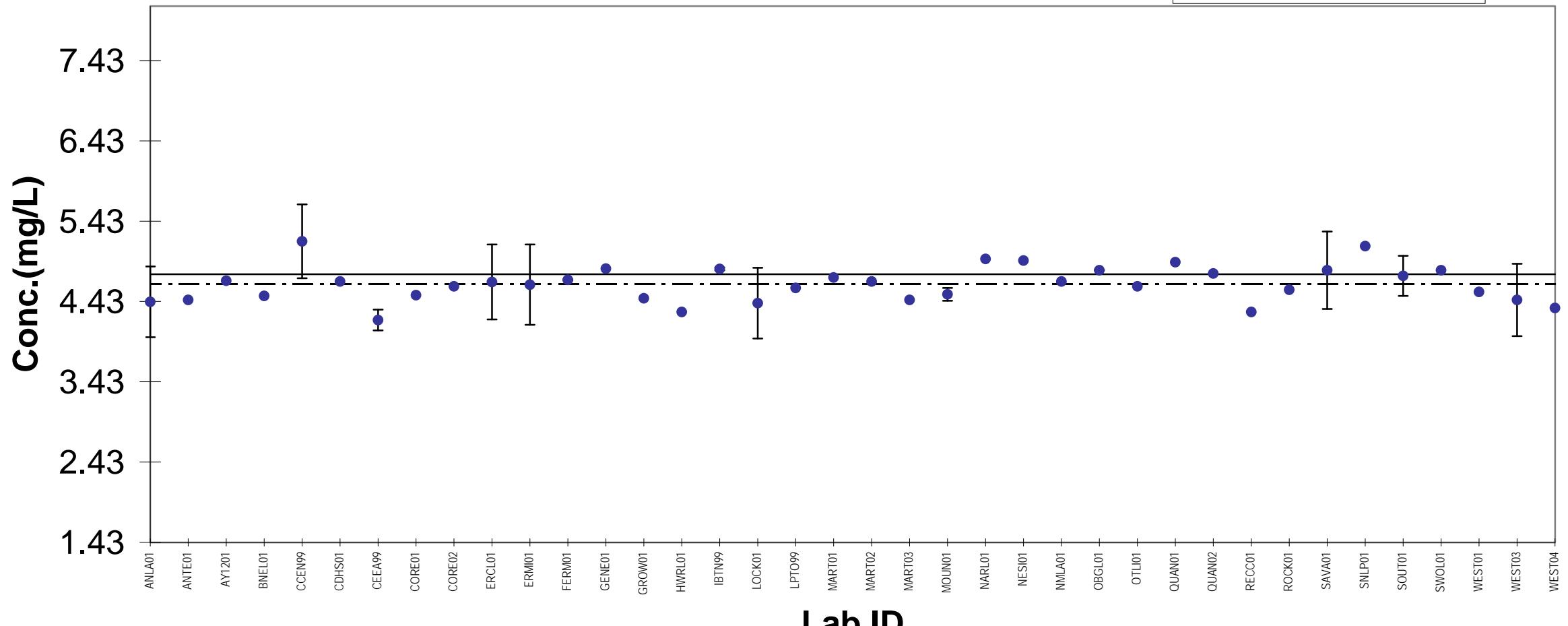
Chromium MAPEP-01-W9

• Lab Result
— Ref. Value 0.38
- - - Mean 0.37



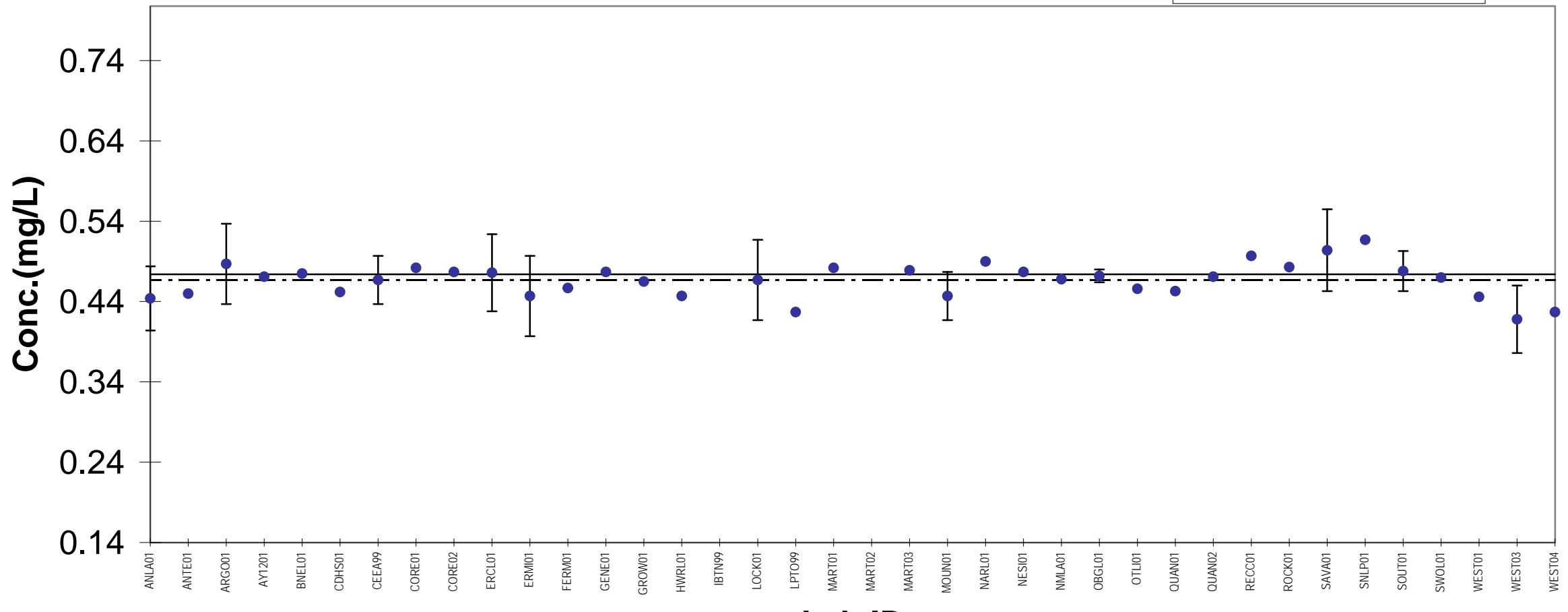
Copper MAPEP-01-W9

• Lab Result
— Ref. Value 4.76
- - - Mean 4.64



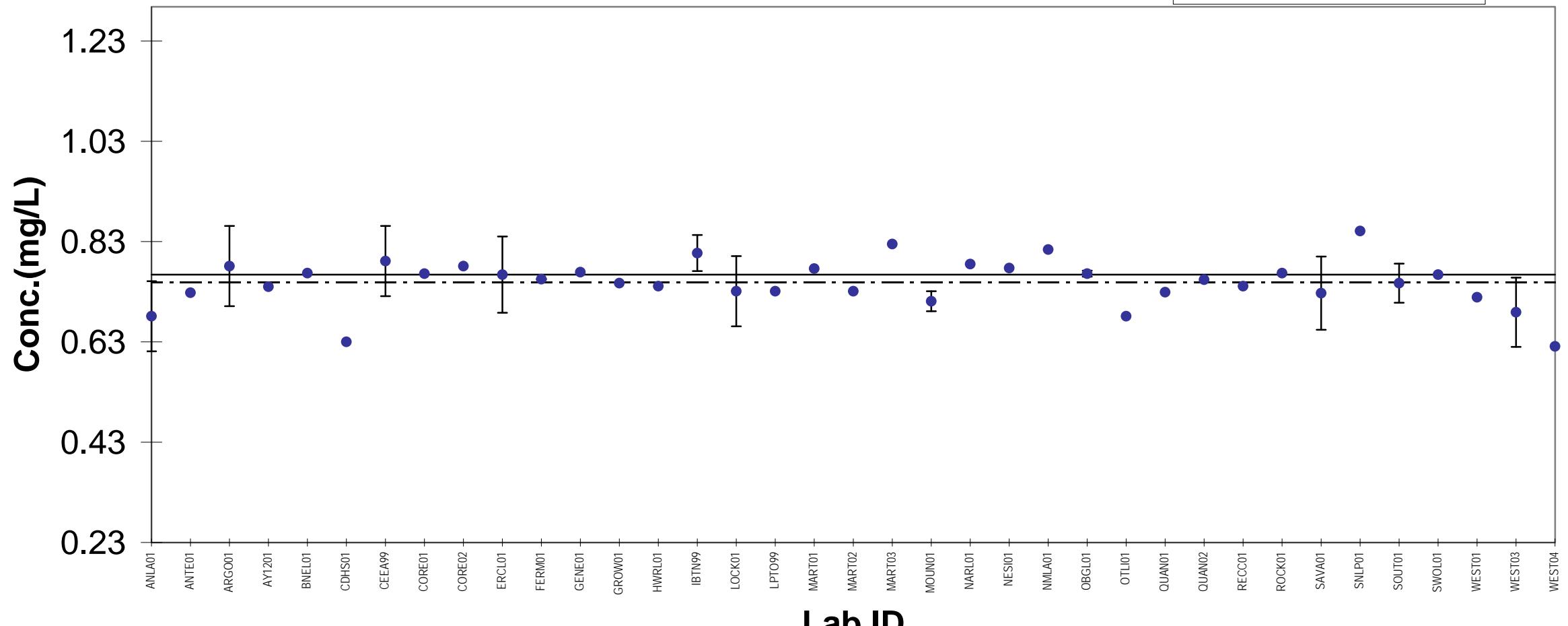
Lead MAPEP-01-W9

• Lab Result
— Ref. Value 0.47
- - - Mean 0.46



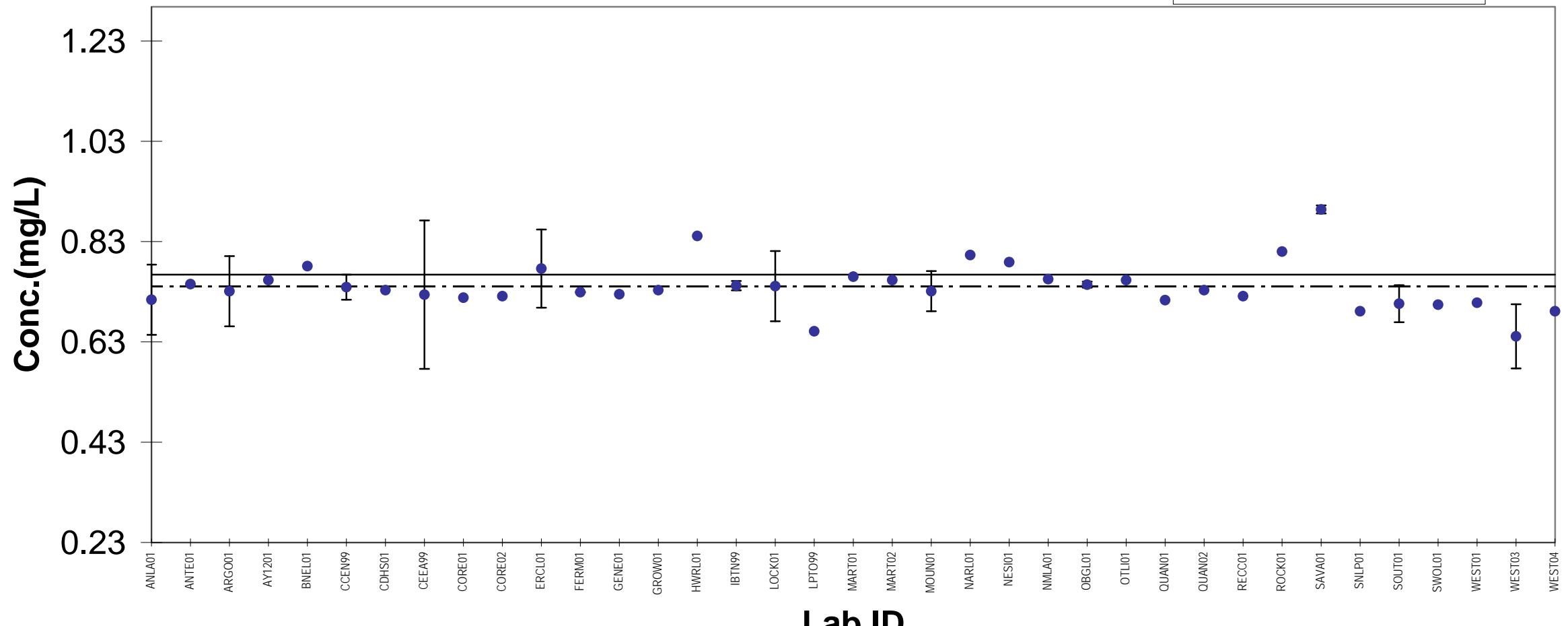
Nickel MAPEP-01-W9

• Lab Result
— Ref. Value 0.76
- - - Mean 0.74



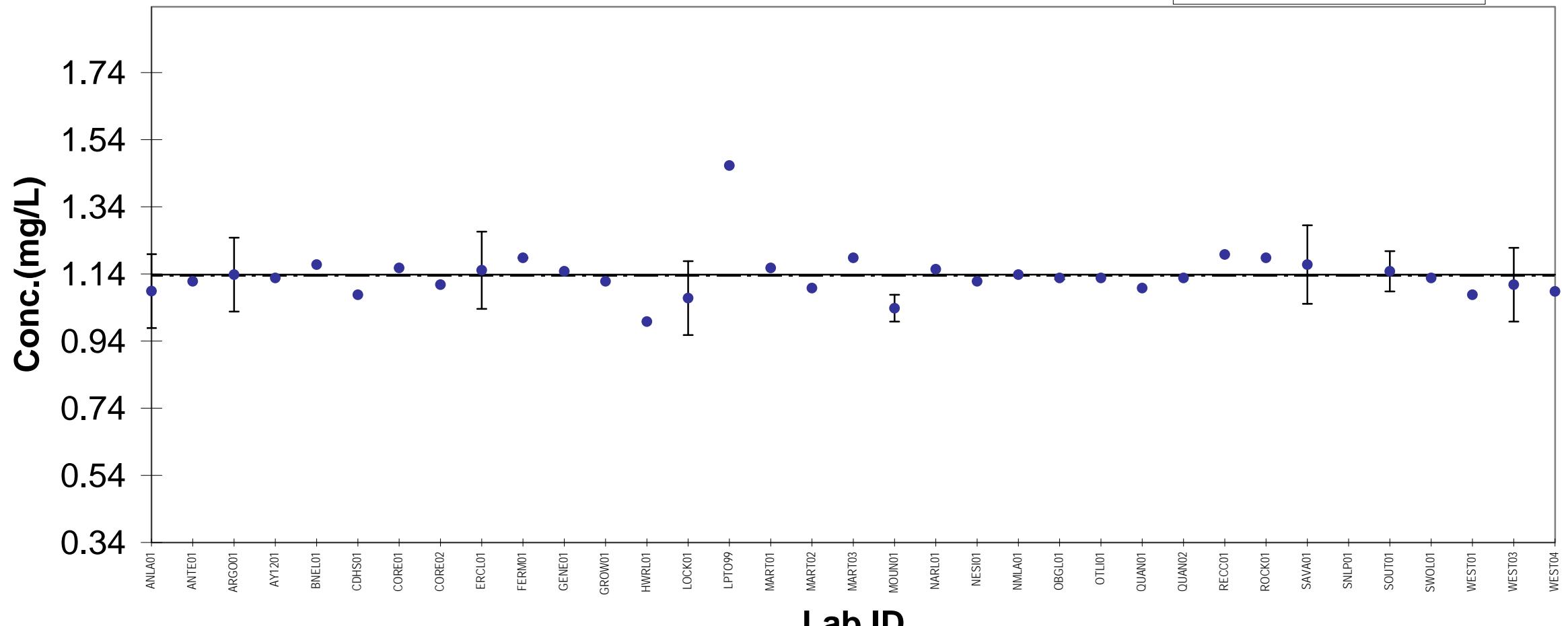
Selenium MAPEP-01-W9

• Lab Result
— Ref. Value 0.76
- - - Mean 0.73



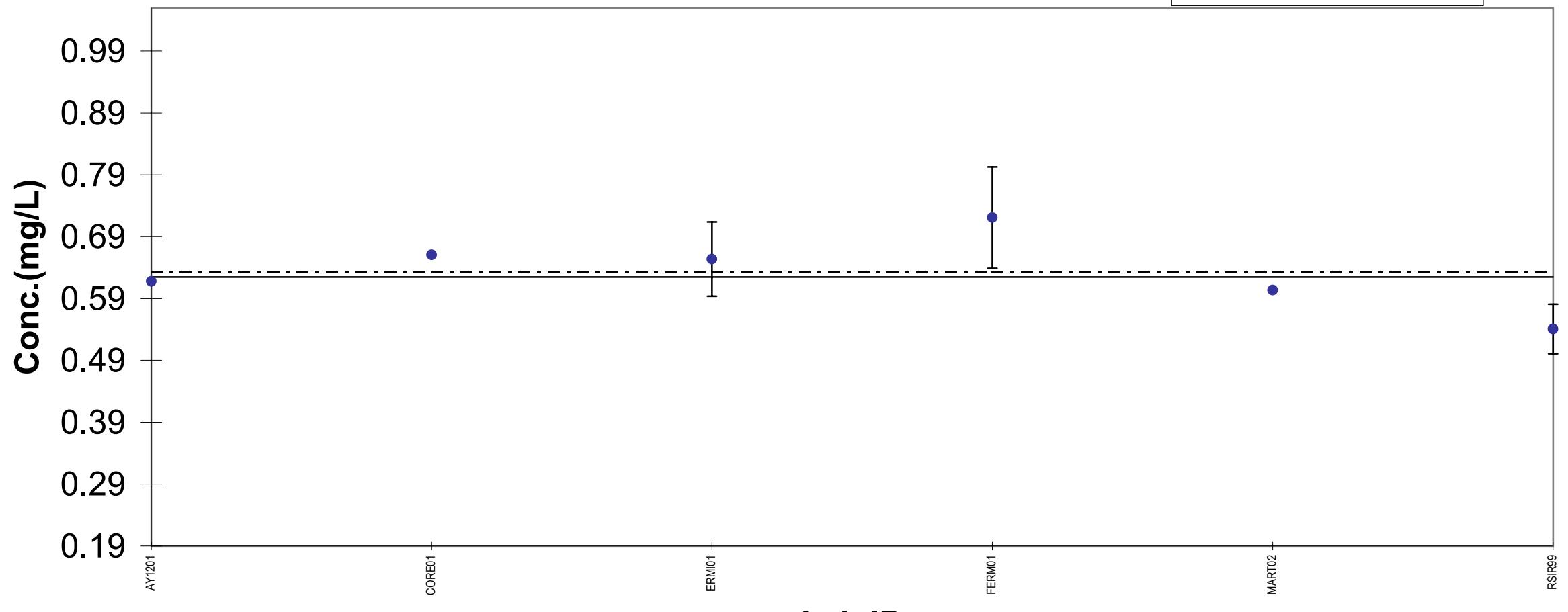
Thallium MAPEP-01-W9

• Lab Result
— Ref. Value 1.13
- - - Mean 1.13



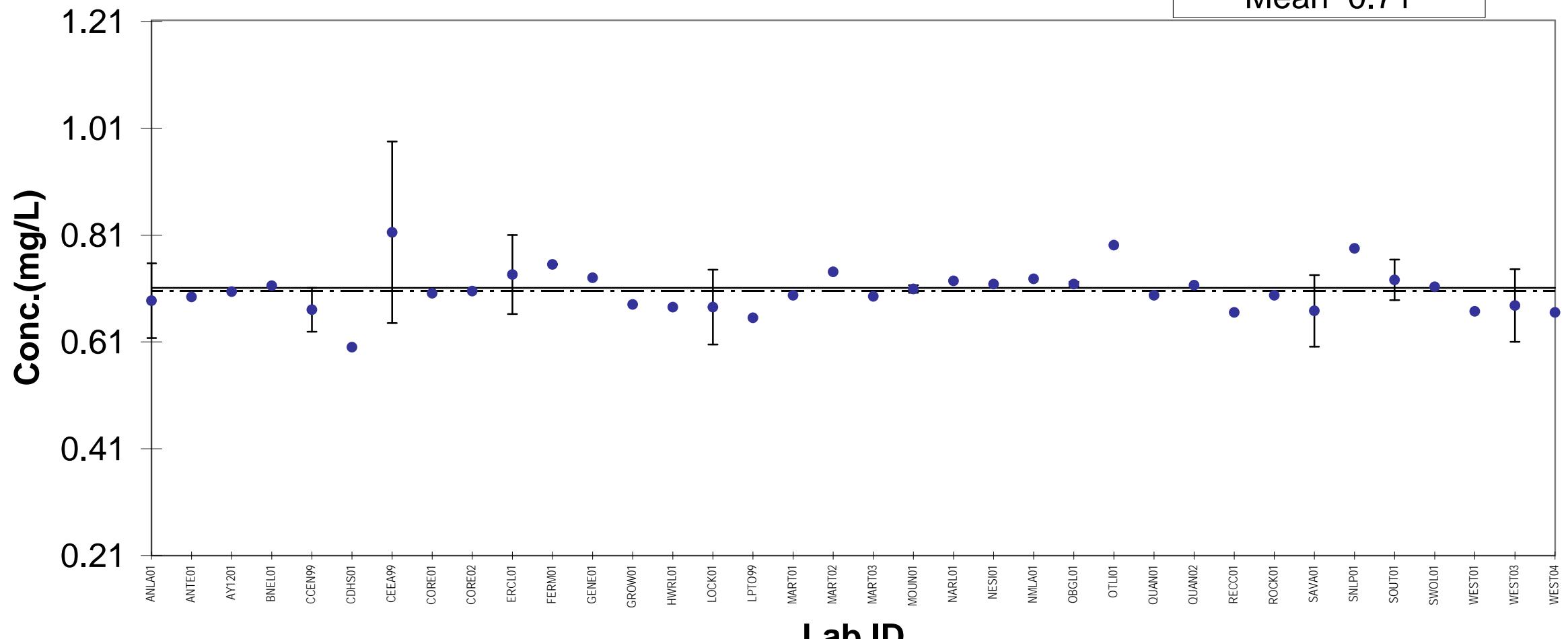
Uranium-Total MAPEP-01-W9

• Lab Result
— Ref. Value 0.62
- - - Mean 0.62



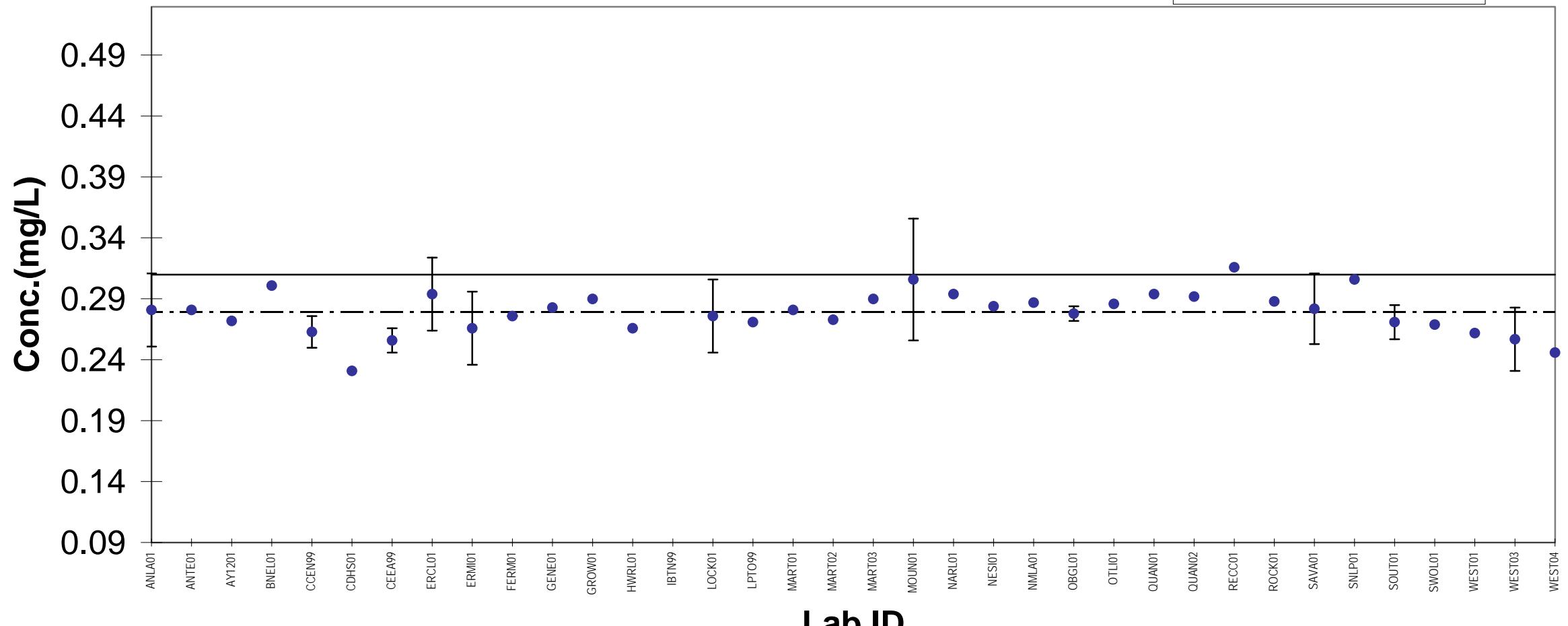
Vanadium MAPEP-01-W9

• Lab Result
— Ref. Value 0.71
- - - Mean 0.71



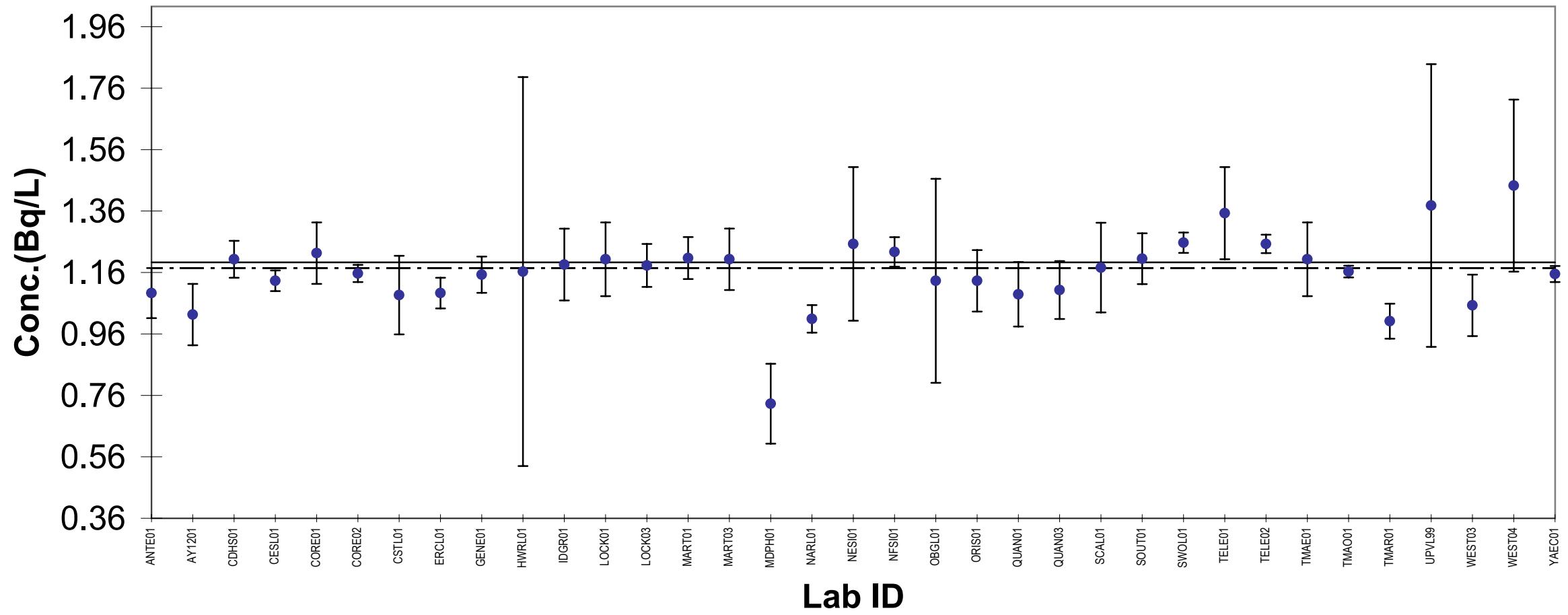
Zinc MAPEP-01-W9

• Lab Result
— Ref. Value 0.31
- - - Mean 0.28



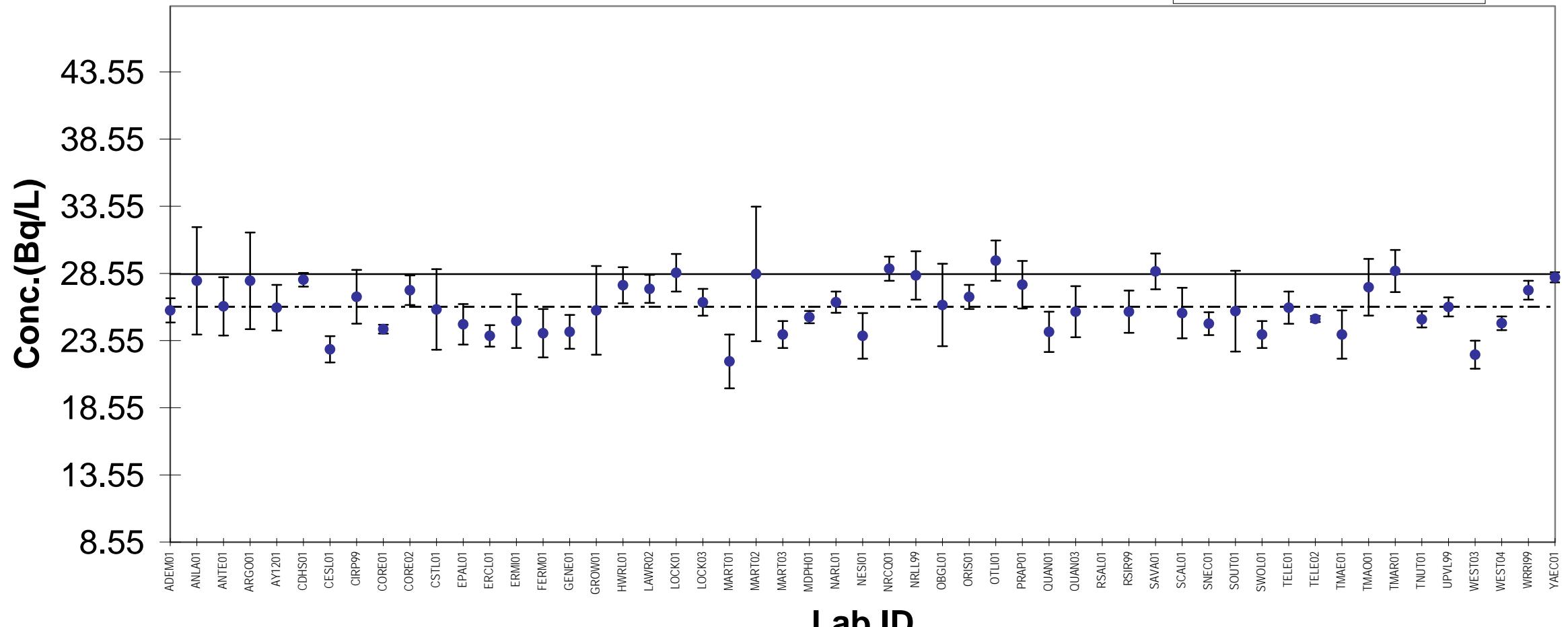
Americium-241 MAPEP-01-W9

• Lab Result
— Ref. Value 1.19
- - - Mean 1.17



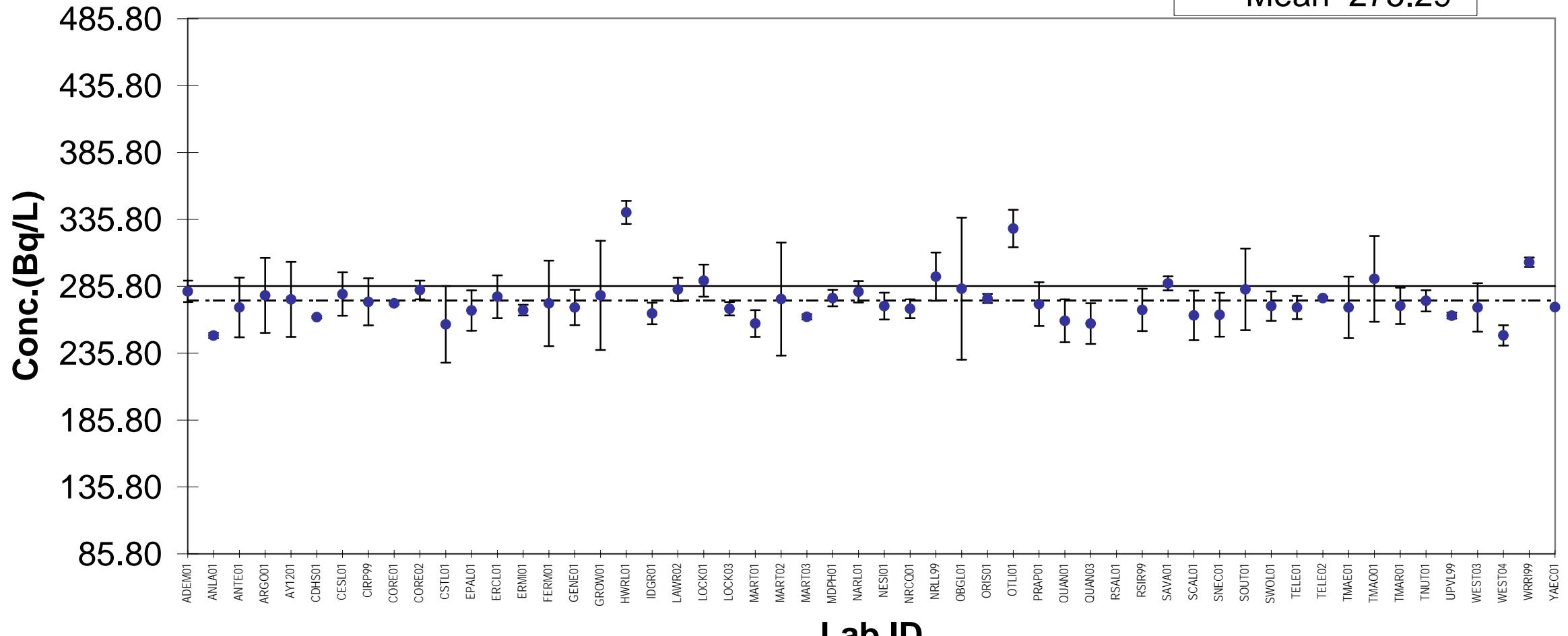
Cesium-134 MAPEP-01-W9

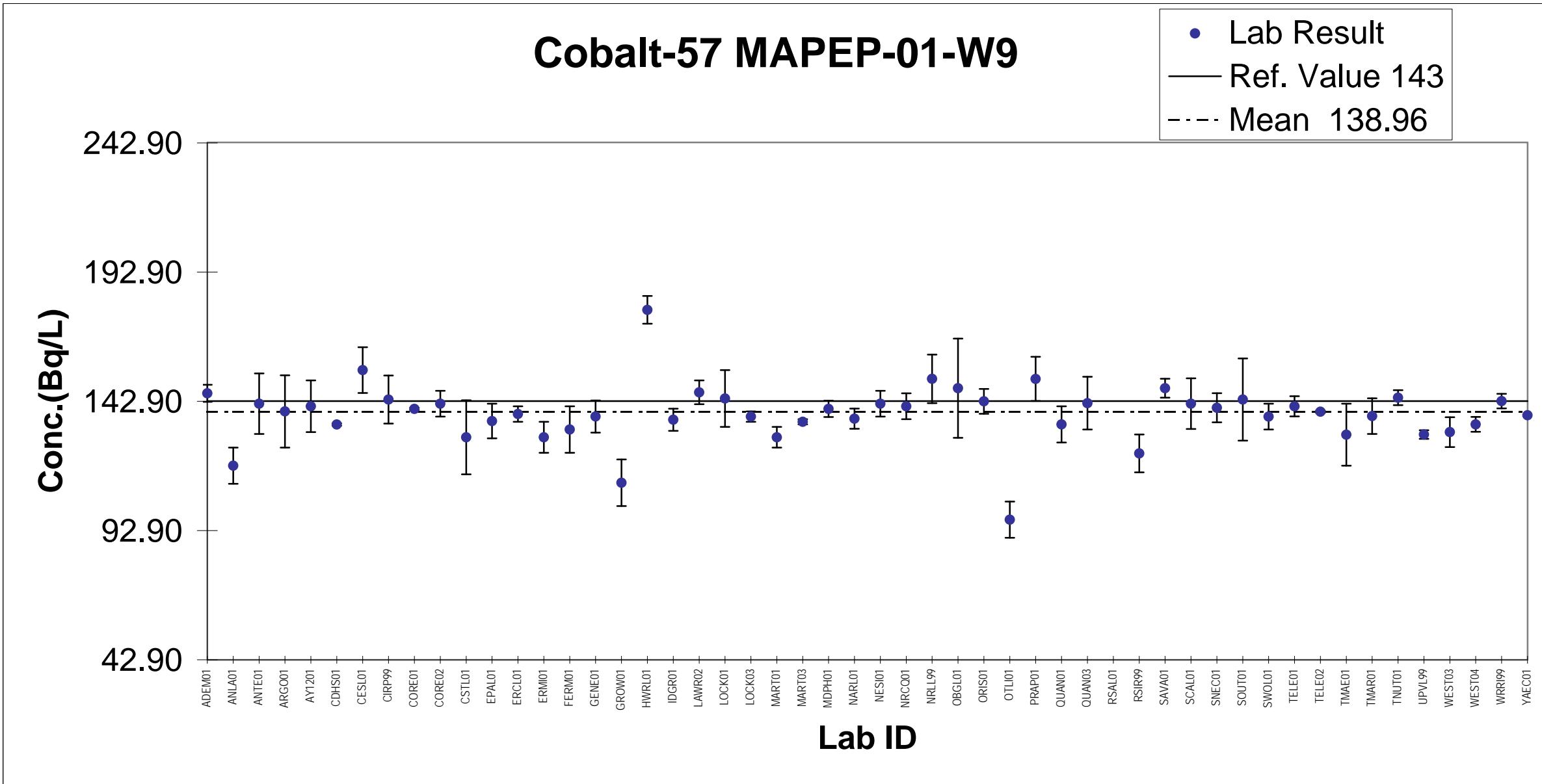
• Lab Result
— Ref. Value 28.5
- - - Mean 26.05



Cesium-137 MAPEP-01-W9

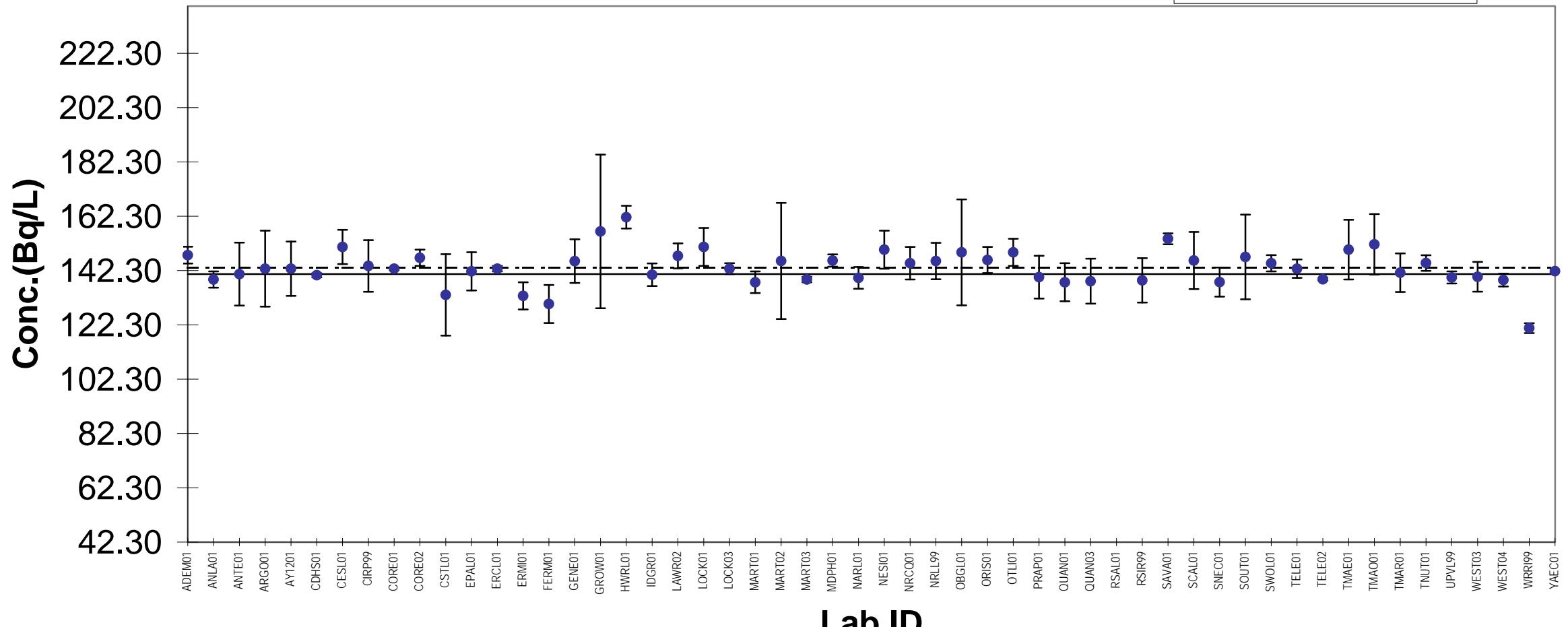
• Lab Result
— Ref. Value 286
- - - Mean 275.29



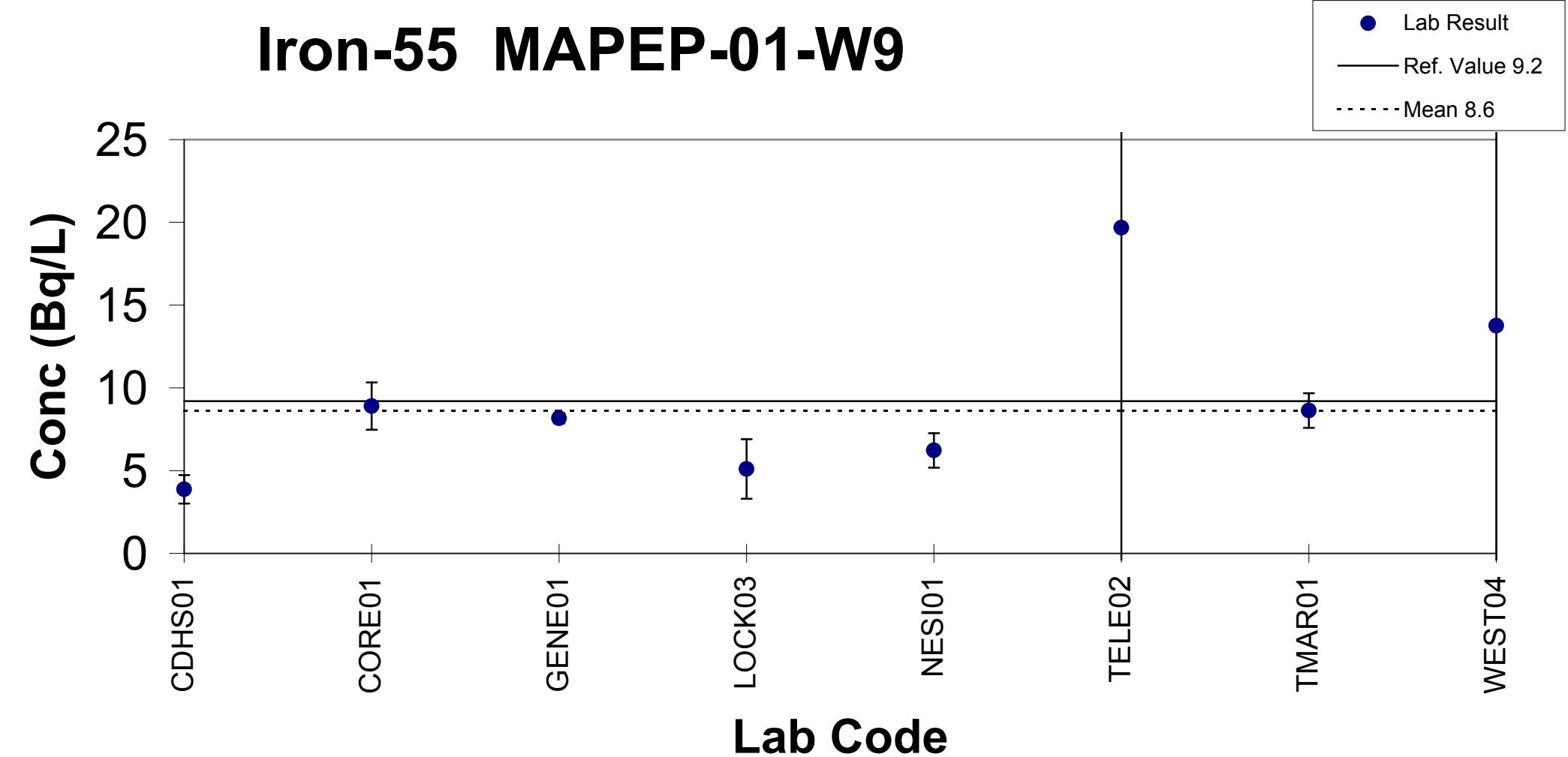


Cobalt-60 MAPEP-01-W9

• Lab Result
— Ref. Value 141
- - - Mean 143.37

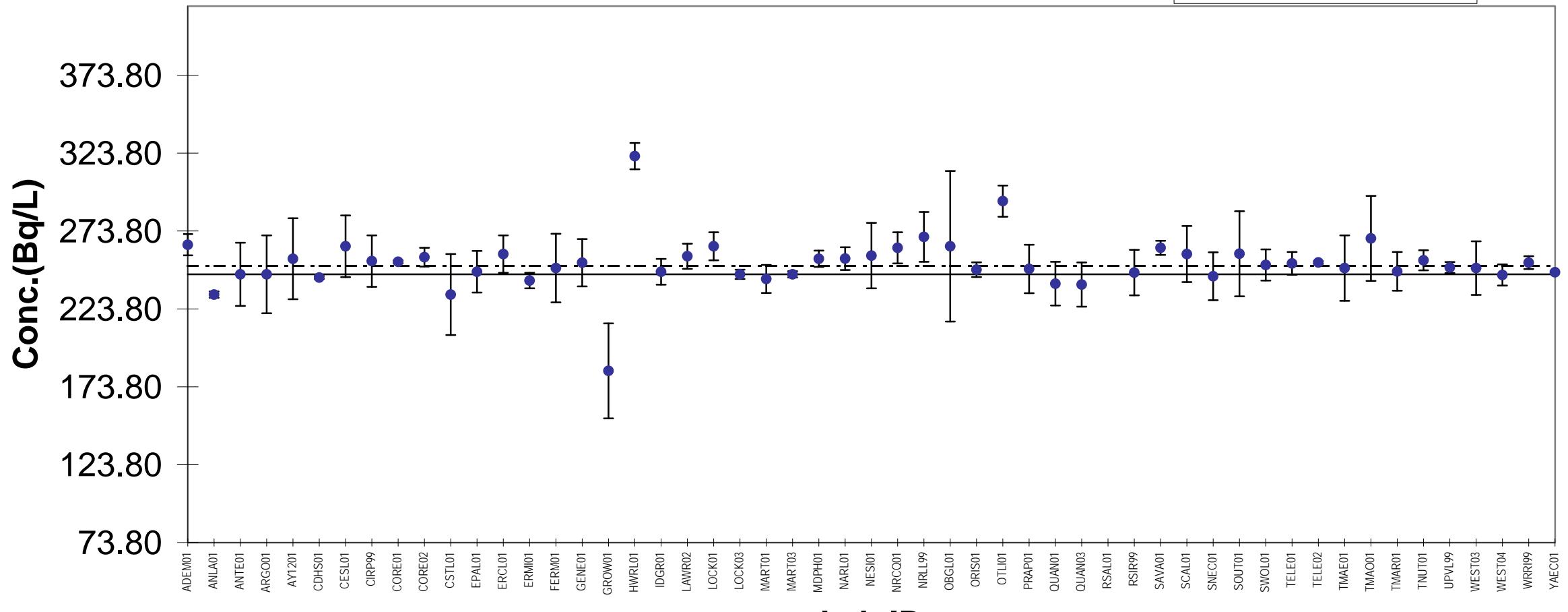


Iron-55 MAPEP-01-W9



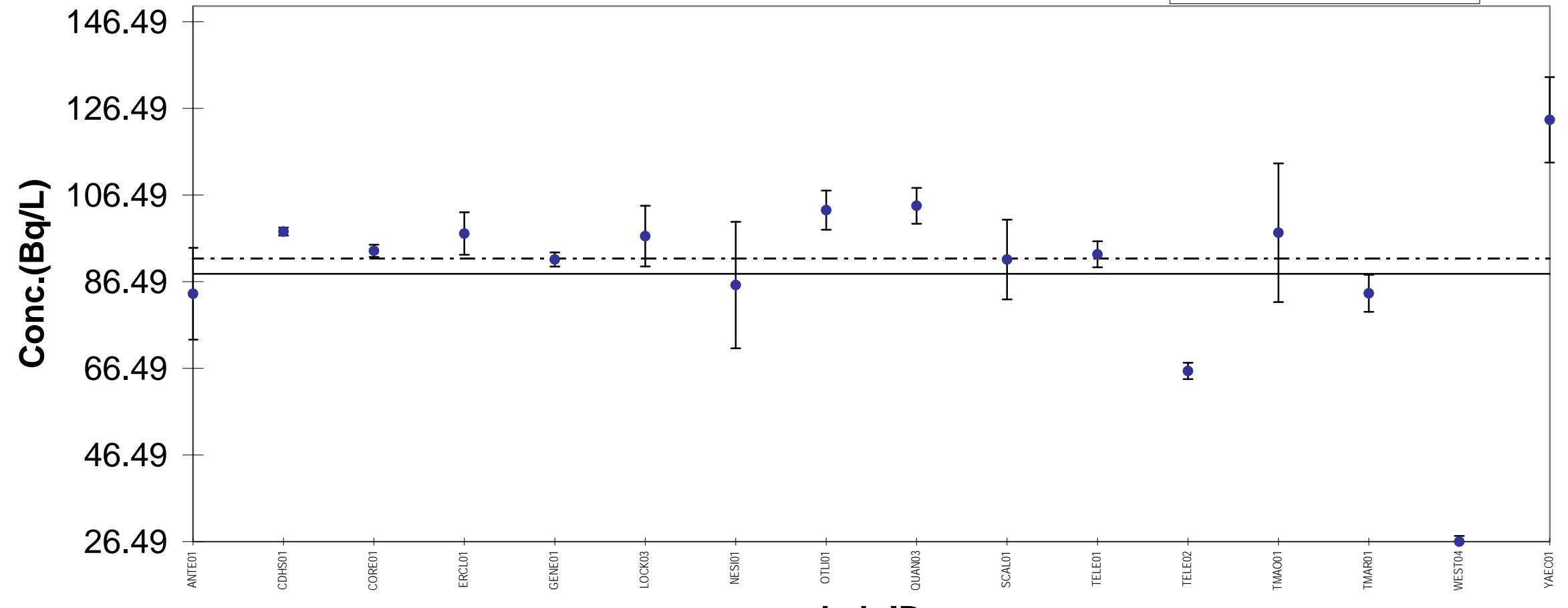
Manganese-54 MAPEP-01-W9

• Lab Result
— Ref. Value 246
- - - Mean 251.59



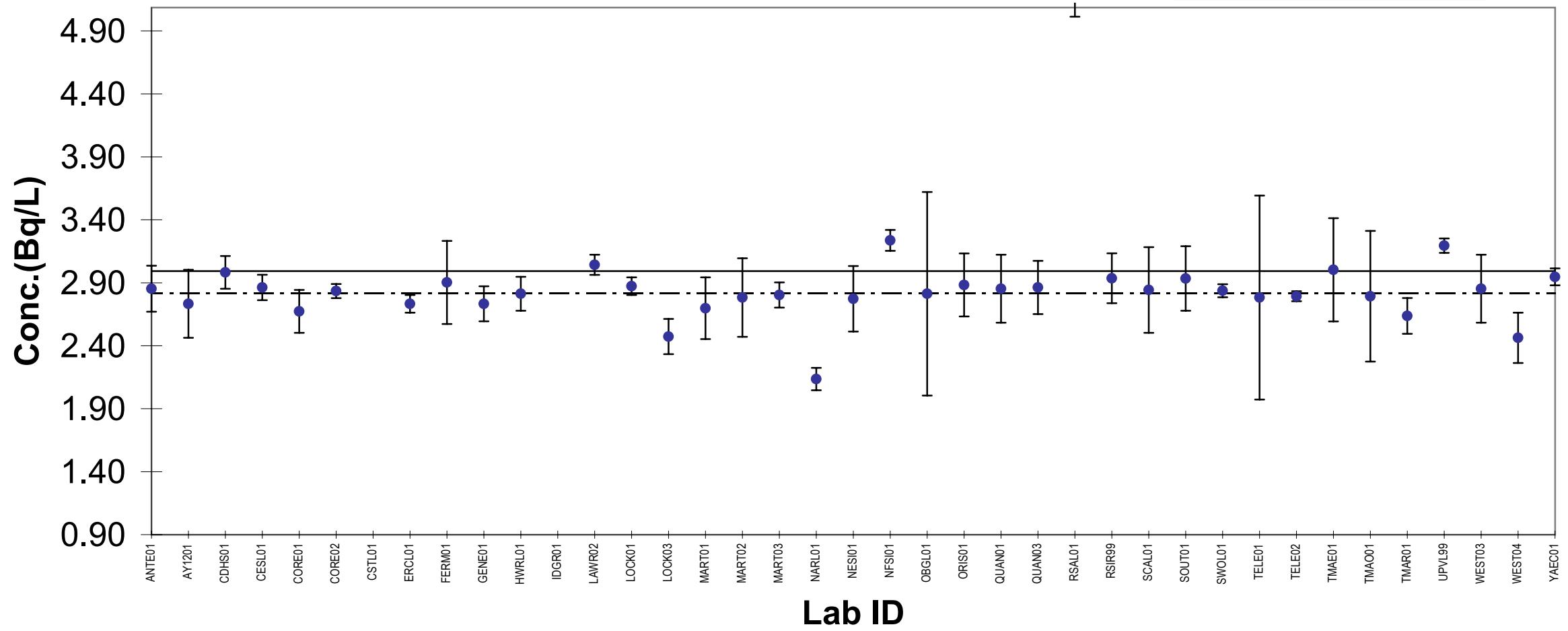
Nickel-63 MAPEP-01-W9

• Lab Result
— Ref. Value 88.3
- - - Mean 91.86



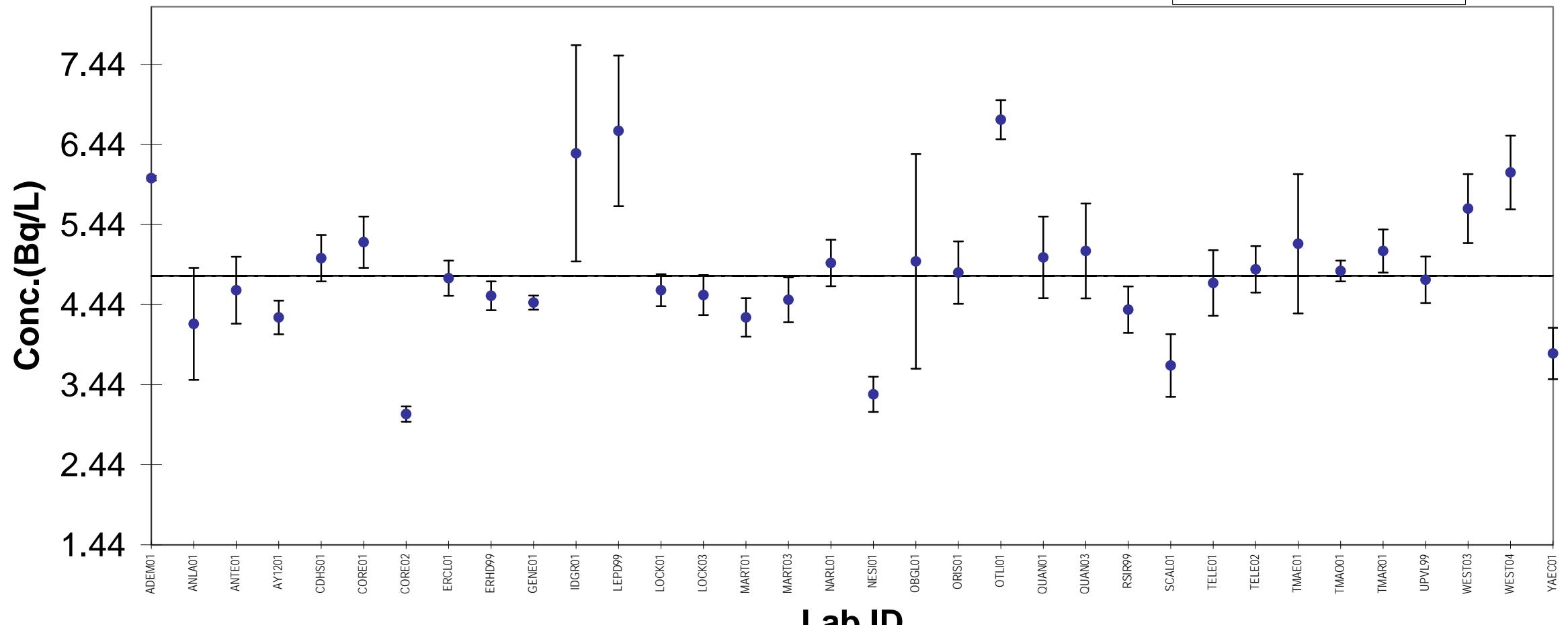
Plutonium-239/240 MAPEP-01-W9

• Lab Result
— Ref. Value 2.99
- - - Mean 2.81



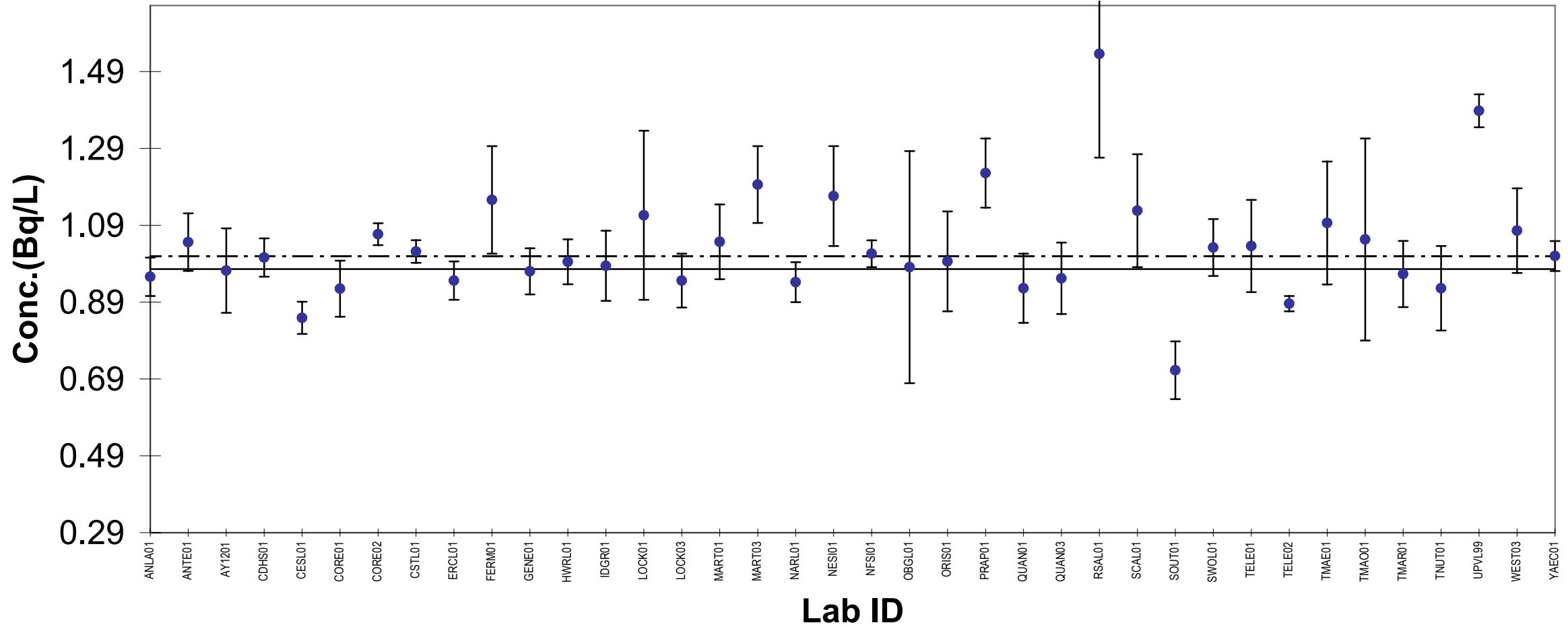
Strontium-90 MAPEP-01-W9

• Lab Result
— Ref. Value 4.8
- - - Mean 4.79



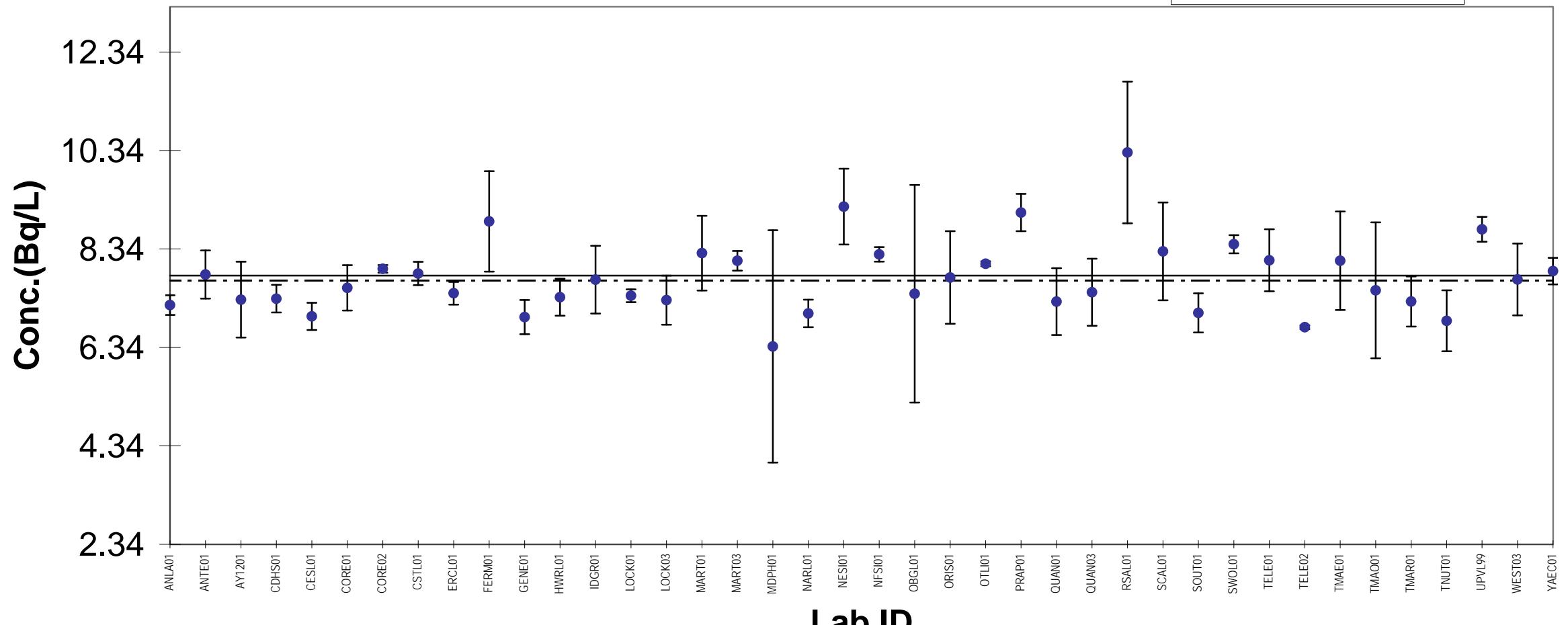
Uranium-234/233 MAPEP-01-W9

• Lab Result
— Ref. Value 0.98
- - - Mean 1.01



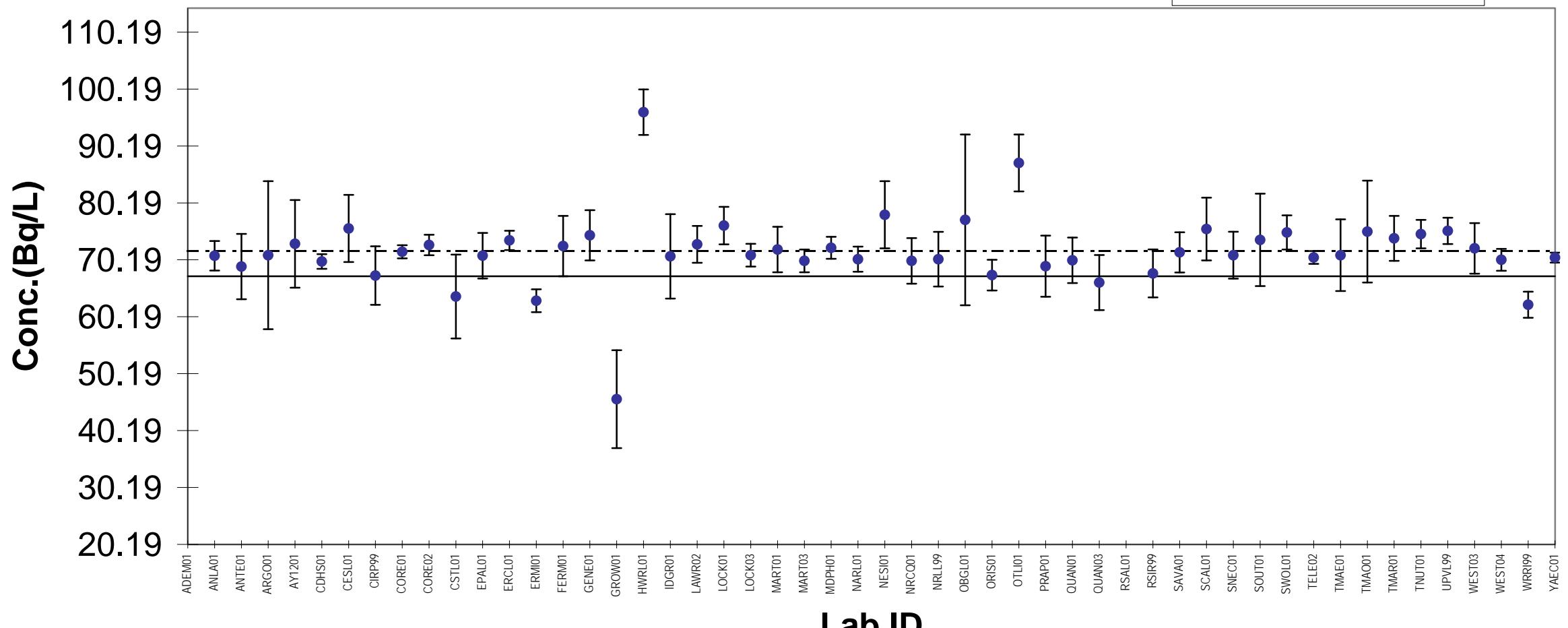
Uranium-238 MAPEP-01-W9

• Lab Result
— Ref. Value 7.8
- - - Mean 7.69



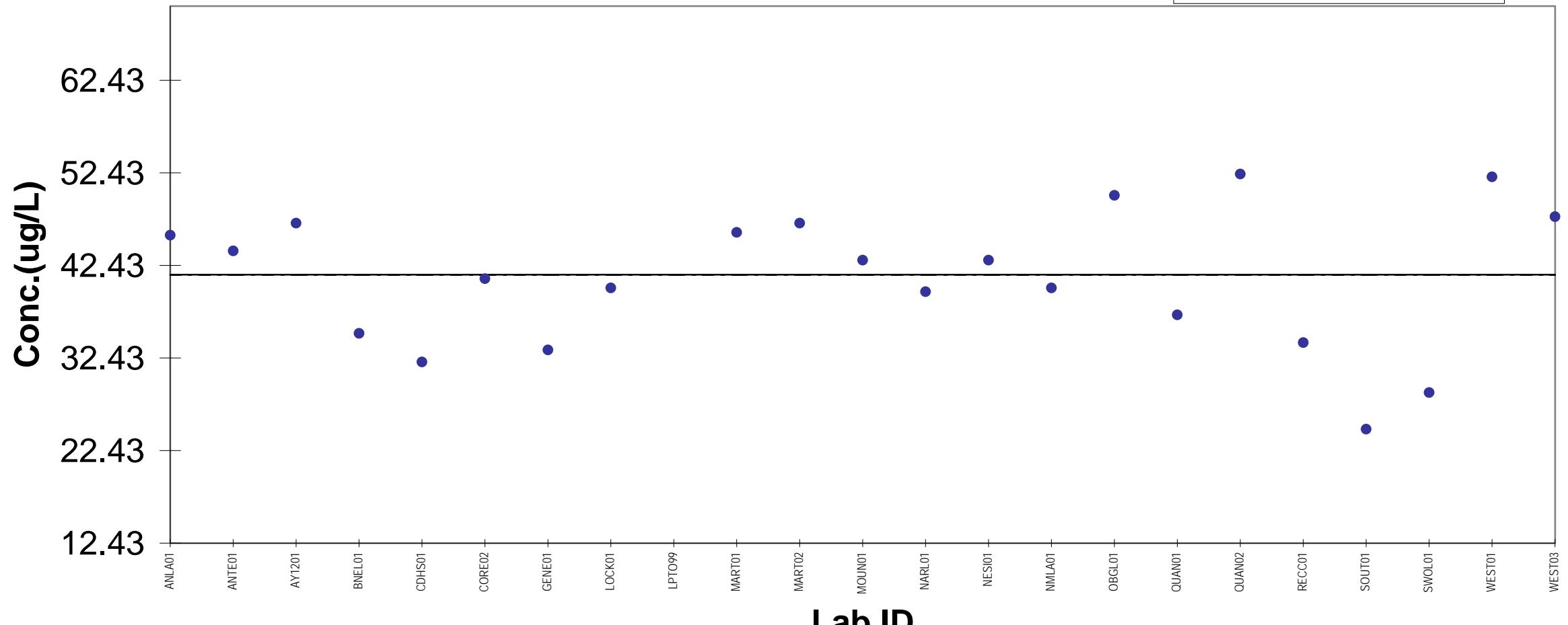
Zinc-65 MAPEP-01-W9

• Lab Result
— Ref. Value 67.3
- - - Mean 71.69



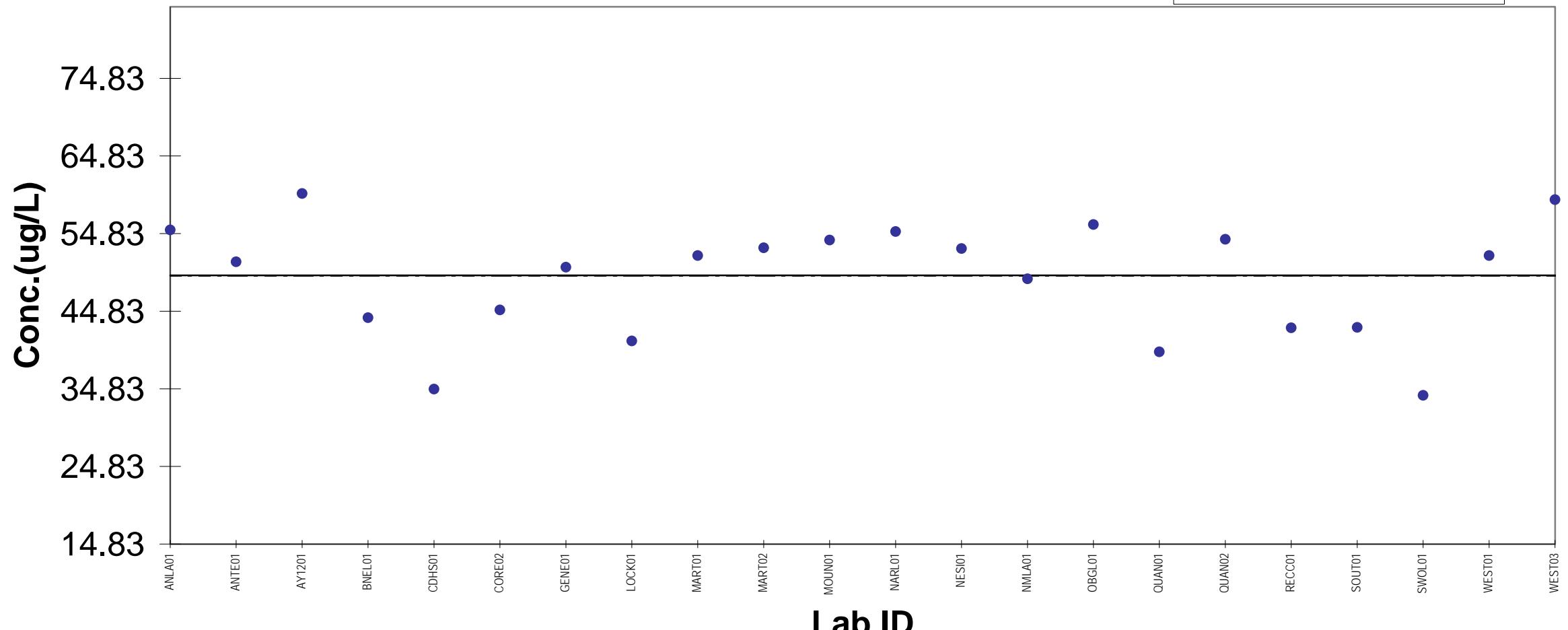
1,3-Dichlorobenzene MAPEP-01-W9

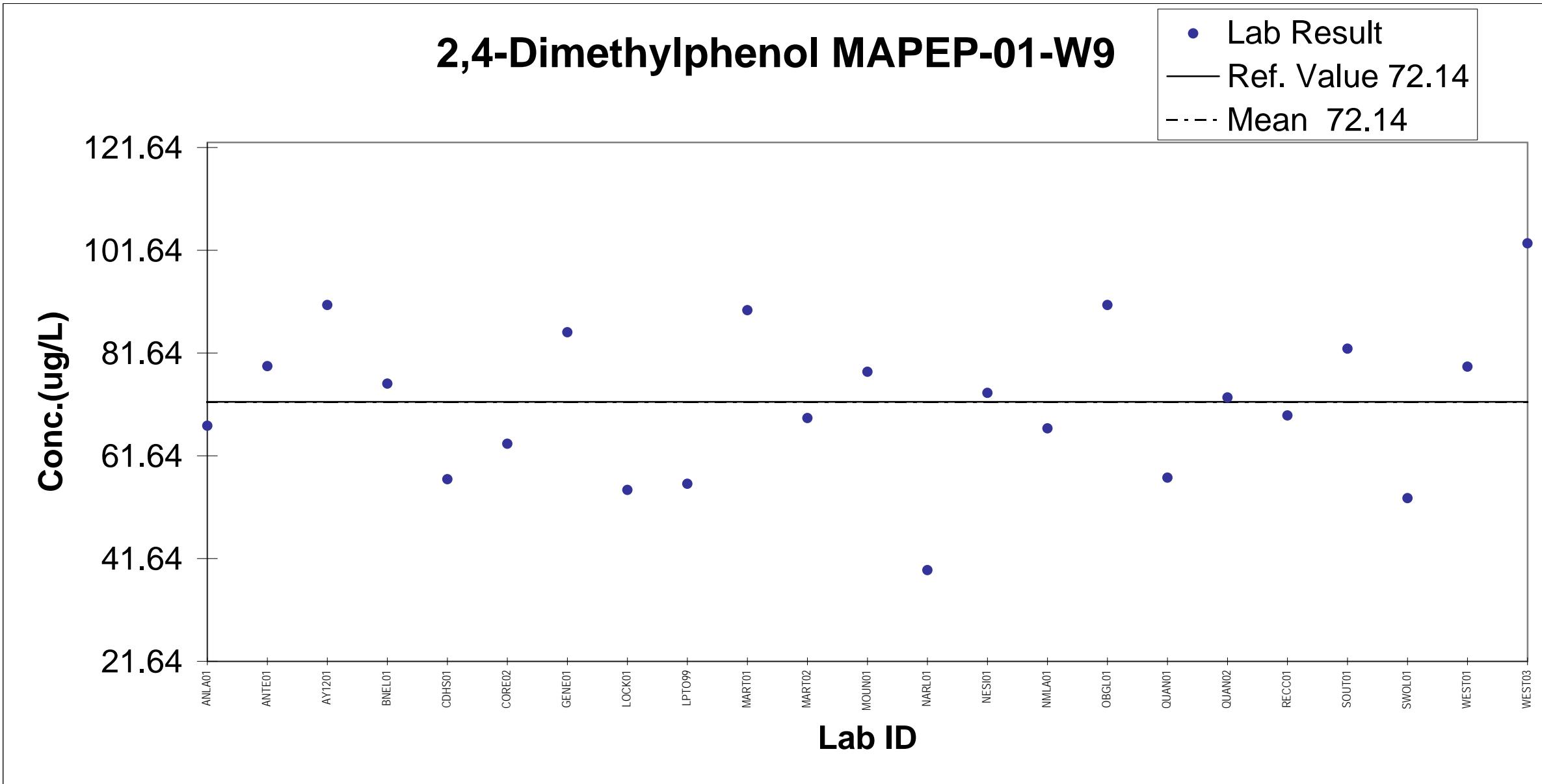
• Lab Result
— Ref. Value 41.43
- - - Mean 41.43



Nitrobenzene MAPEP-01-W9

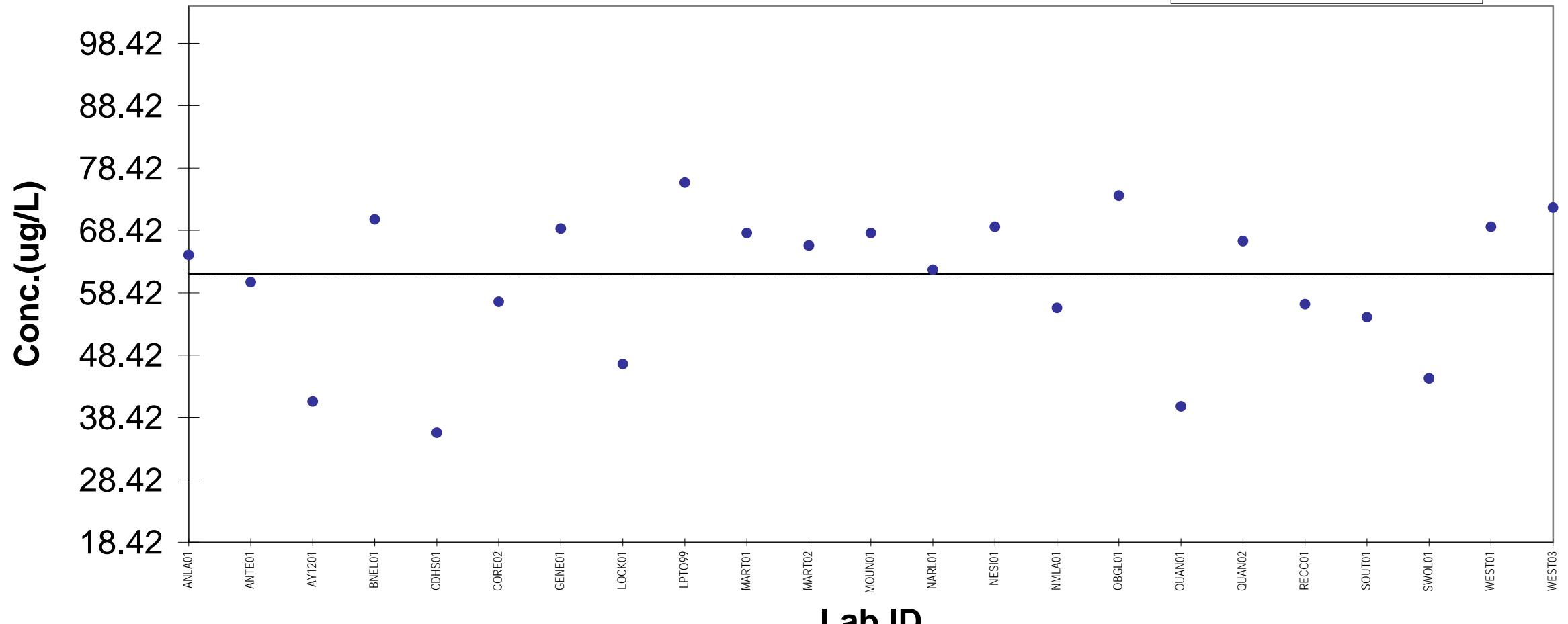
• Lab Result
— Ref. Value 49.44
- - - Mean 49.44





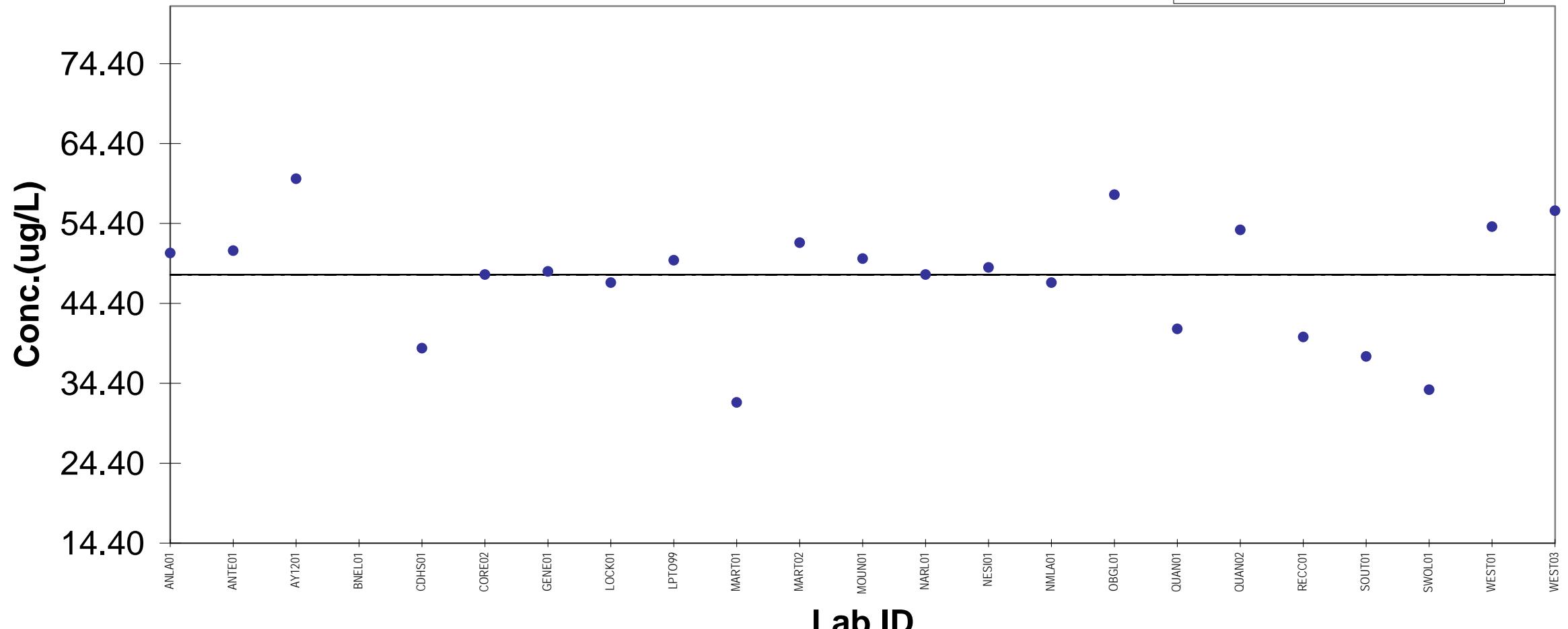
2,4-Dichlorophenol MAPEP-01-W9

• Lab Result
— Ref. Value 61.4
- - - Mean 61.4



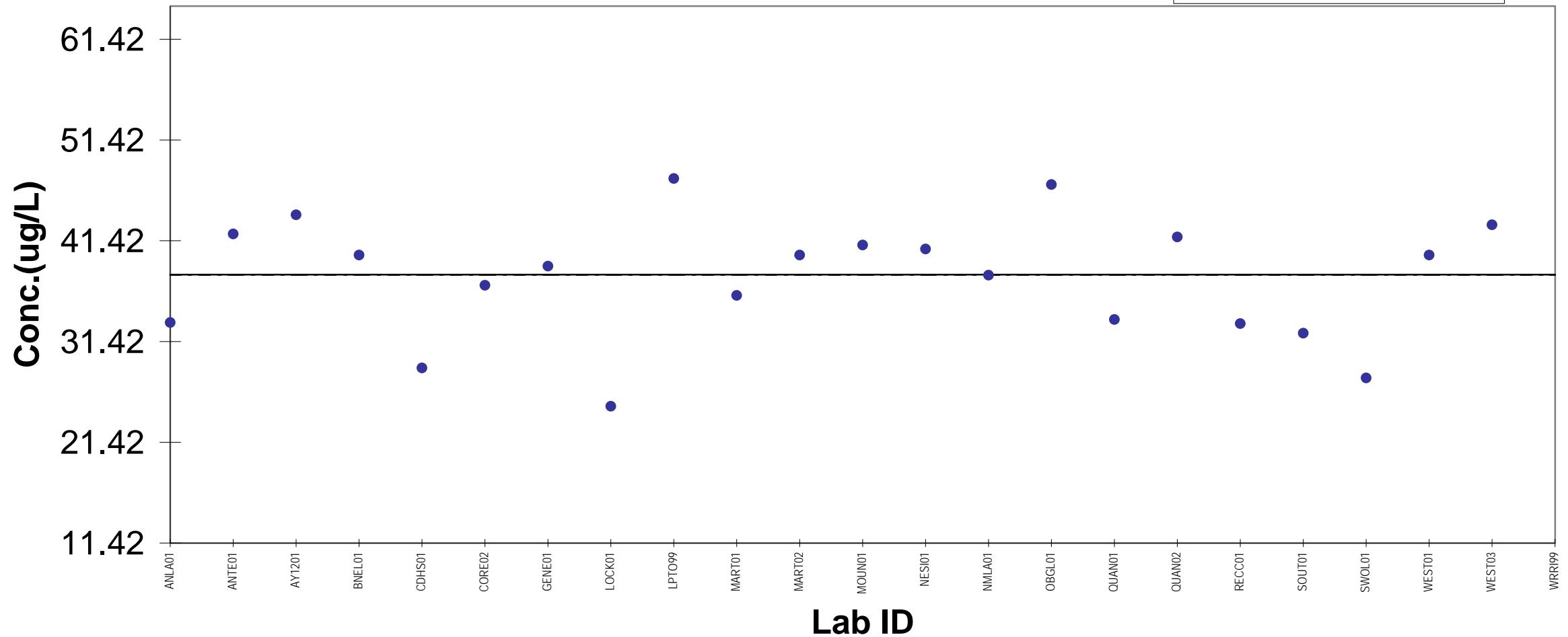
1,2,4-Trichlorobenzene MAPEP-01-W9

• Lab Result
— Ref. Value 47.99
- - - Mean 47.99



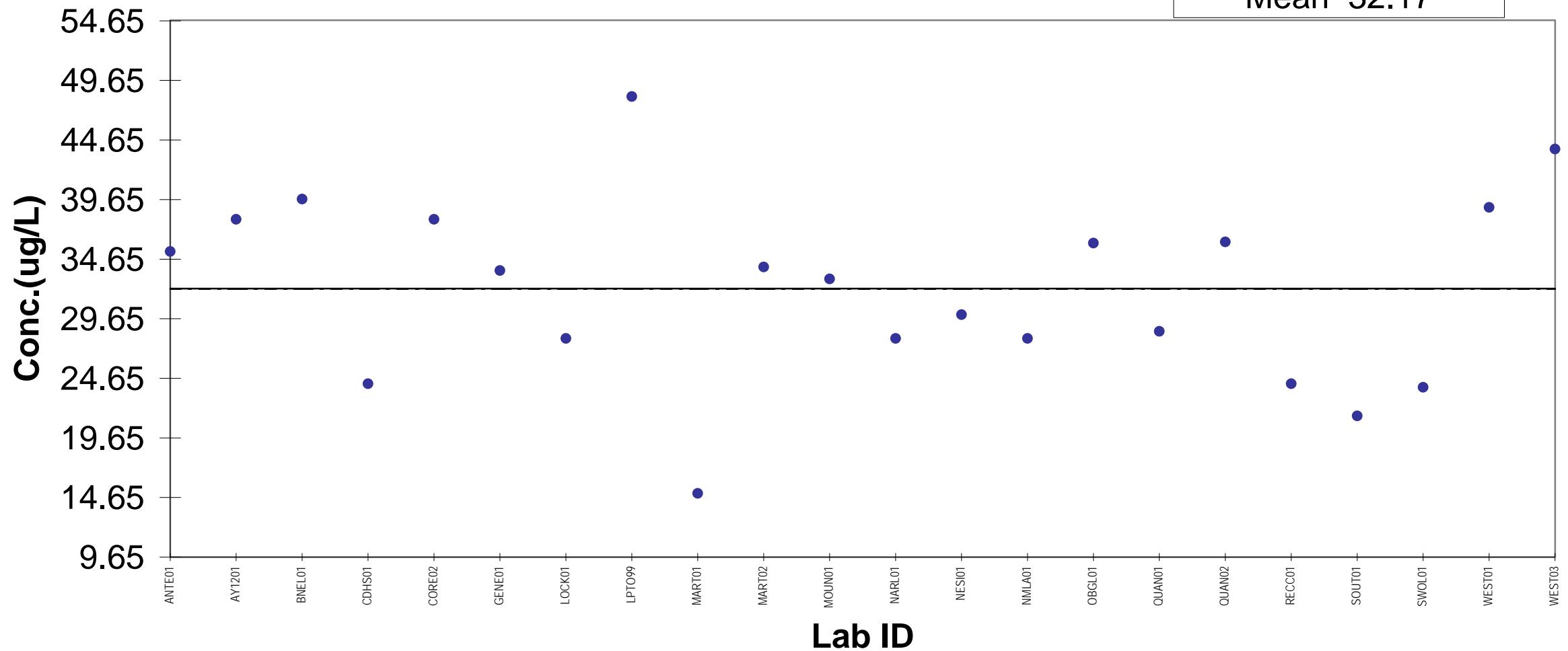
Naphthalene MAPEP-01-W9

• Lab Result
— Ref. Value 38.06
- - - Mean 38.06



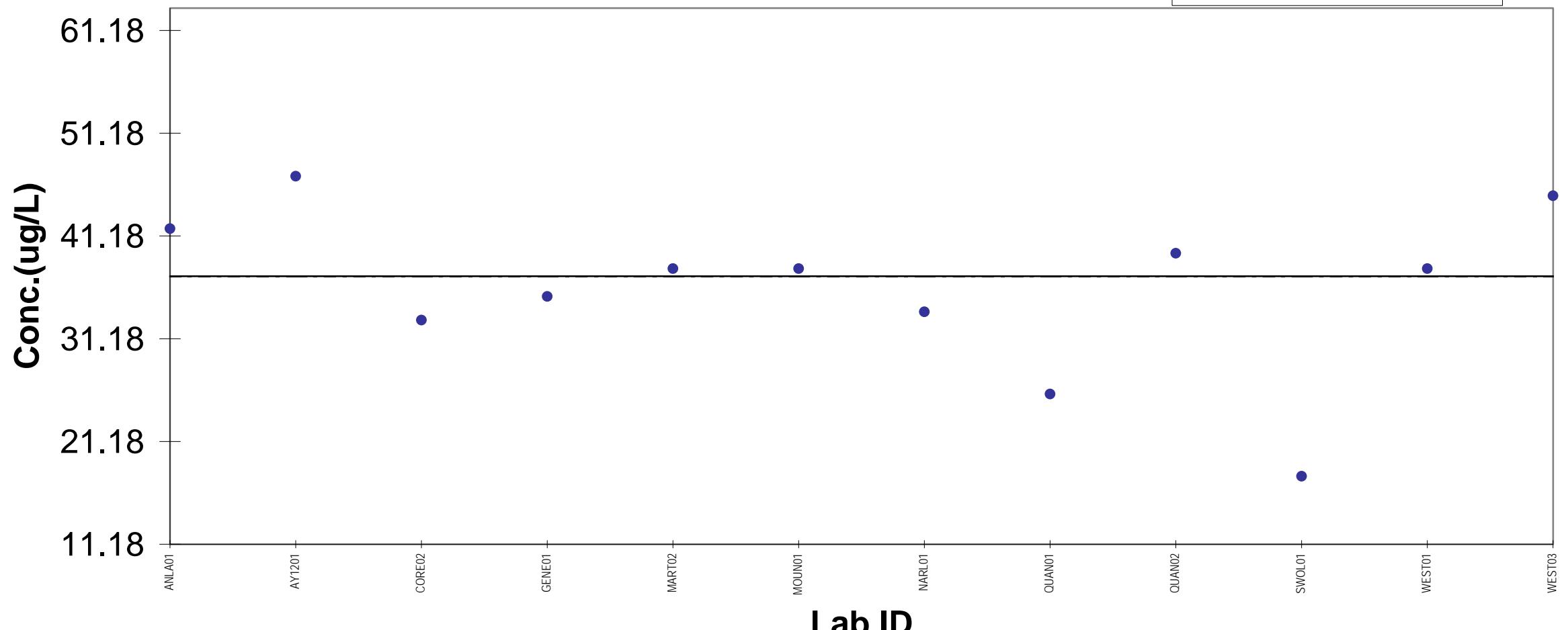
Hexachlorobutadiene MAPEP-01-W9

• Lab Result
— Ref. Value 32.17
- - - Mean 32.17



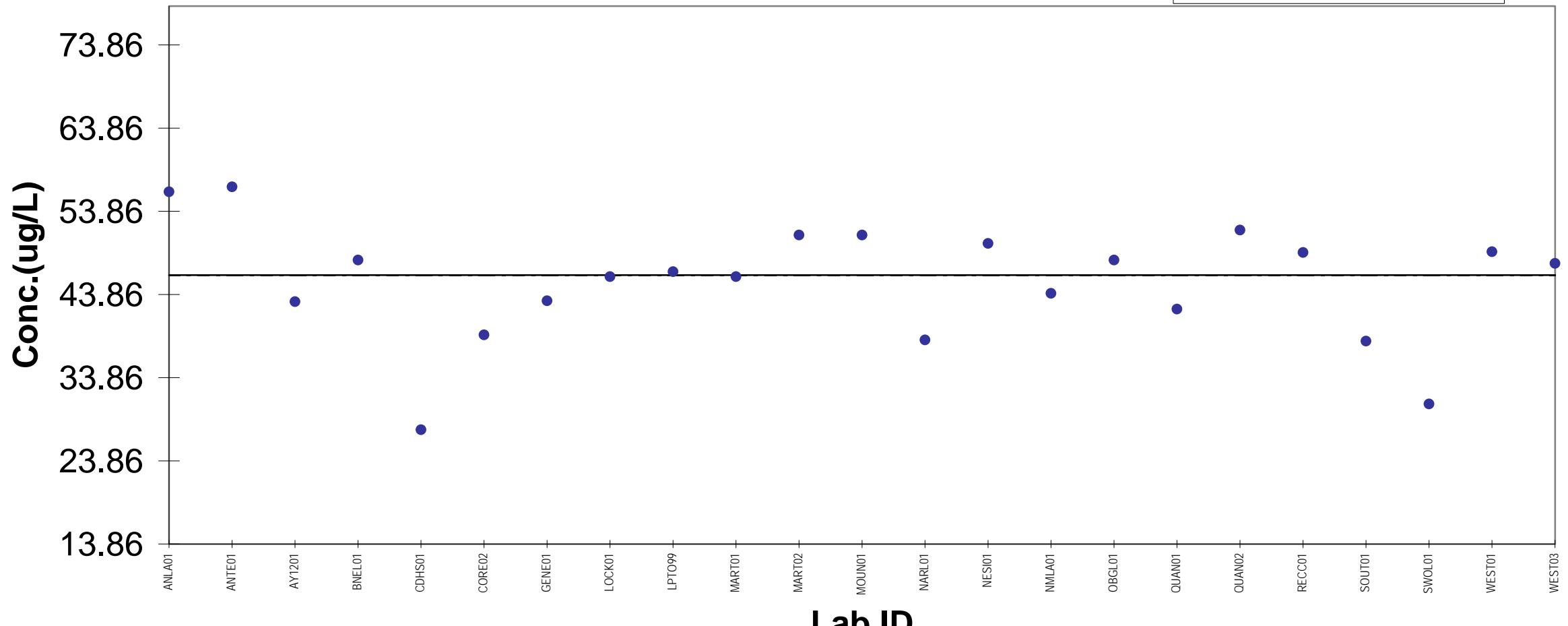
2,6-Dichlorophenol MAPEP-01-W9

• Lab Result
— Ref. Value 37.26
--- Mean 37.26



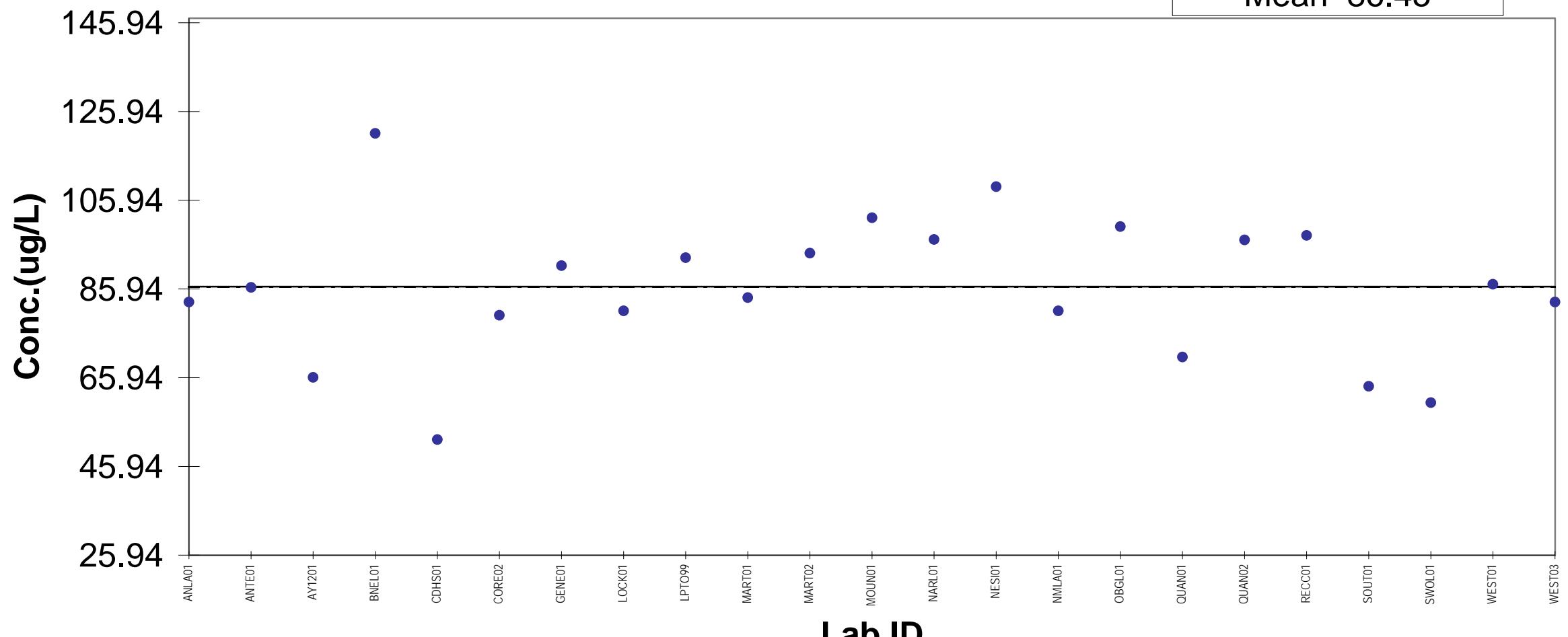
2,6-Dinitrotoluene MAPEP-01-W9

• Lab Result
— Ref. Value 46.19
- - - Mean 46.19



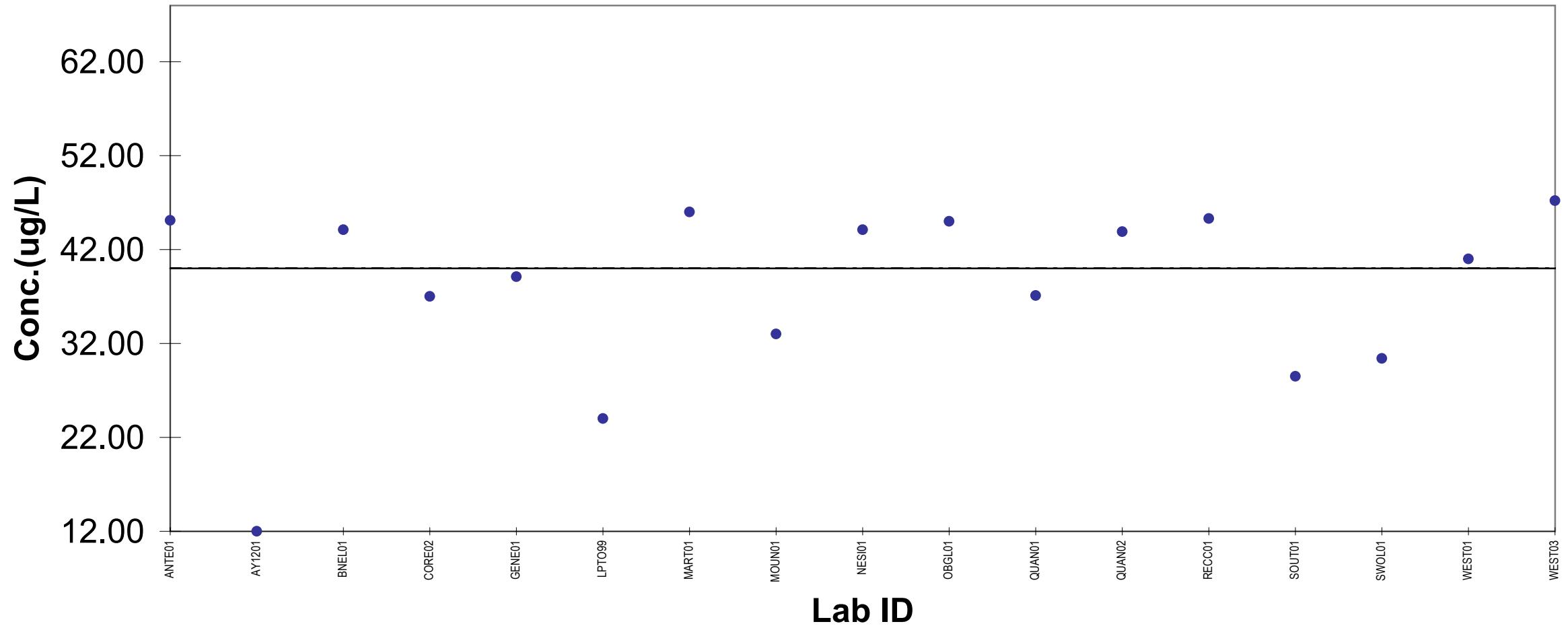
2,4-Dinitrotoluene MAPEP-01-W9

• Lab Result
— Ref. Value 86.45
- - - Mean 86.45



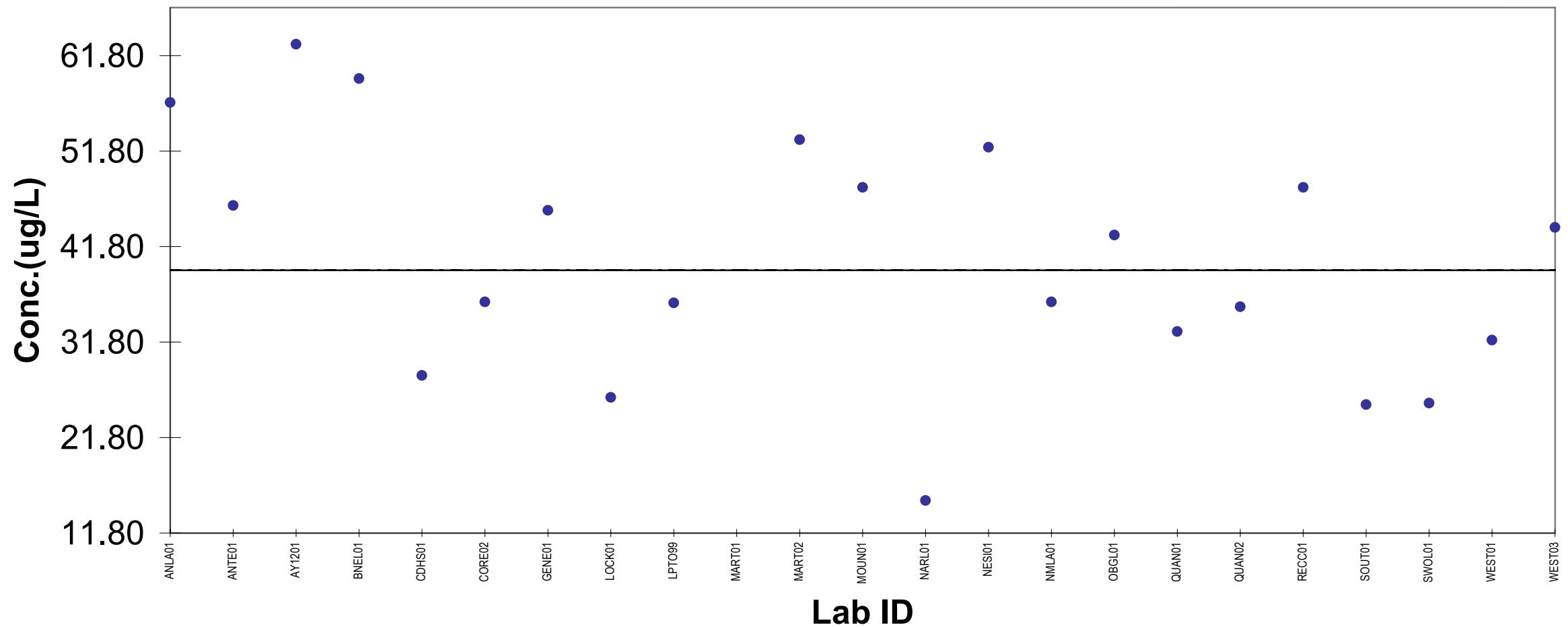
Diethylphthalate MAPEP-01-W9

• Lab Result
— Ref. Value 39.98
- - - Mean 39.98



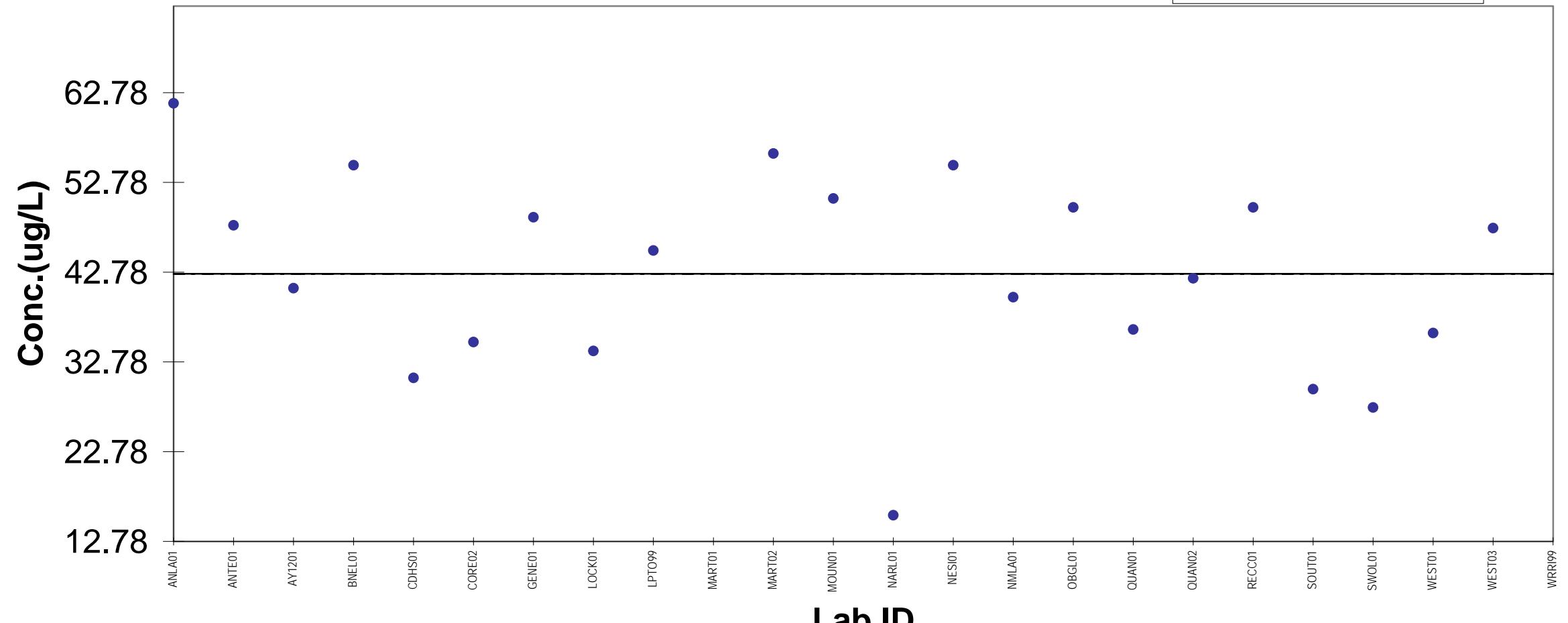
Hexachlorobenzene MAPEP-01-W9

• Lab Result
— Ref. Value 39.31
- - - Mean 39.31



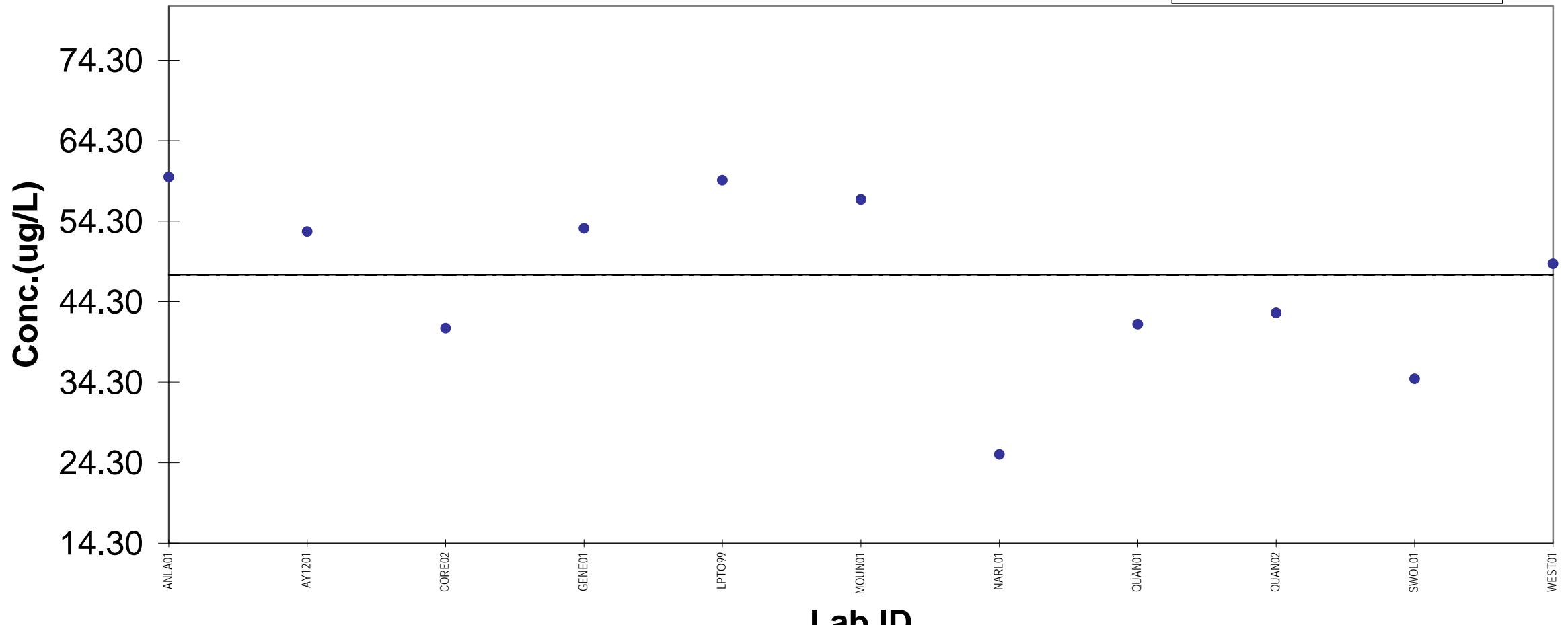
Anthracene MAPEP-01-W9

• Lab Result
— Ref. Value 42.6
- - - Mean 42.6



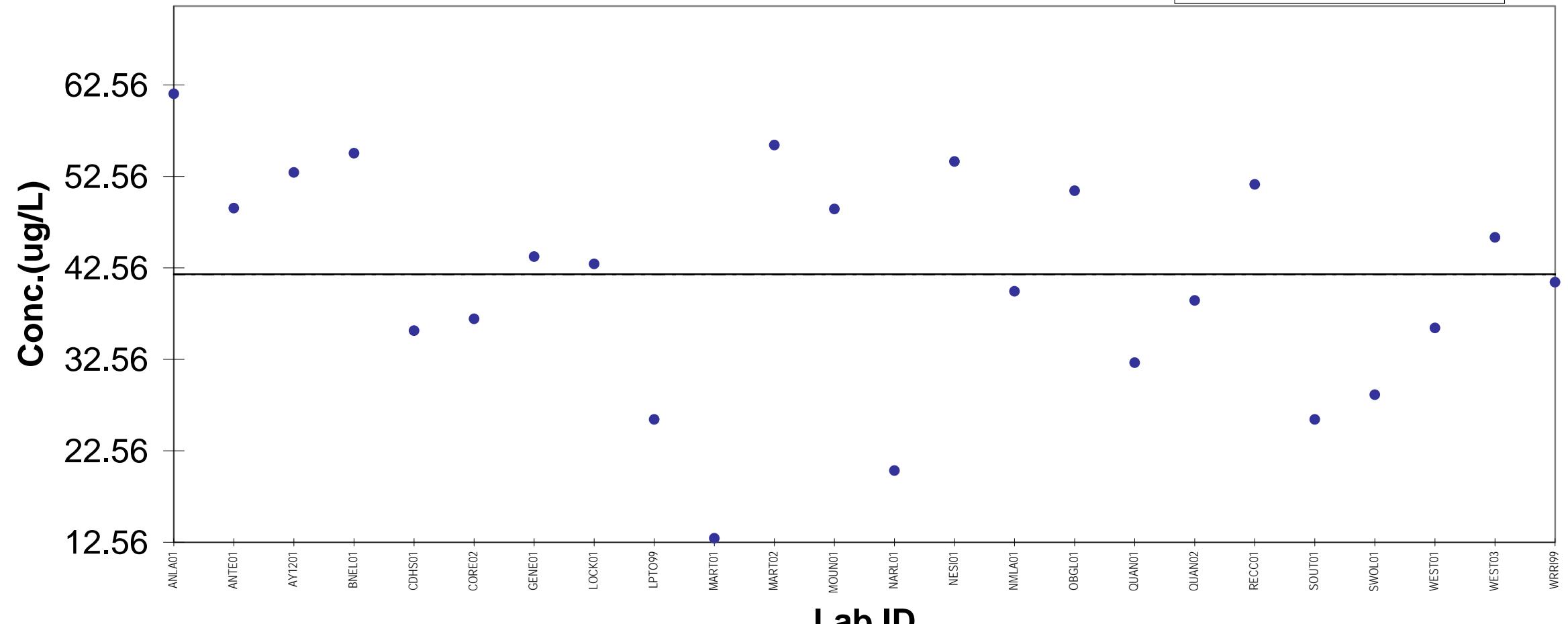
Pentachlorobenzene MAPEP-01-W9

• Lab Result
— Ref. Value 47.65
- - - Mean 47.65



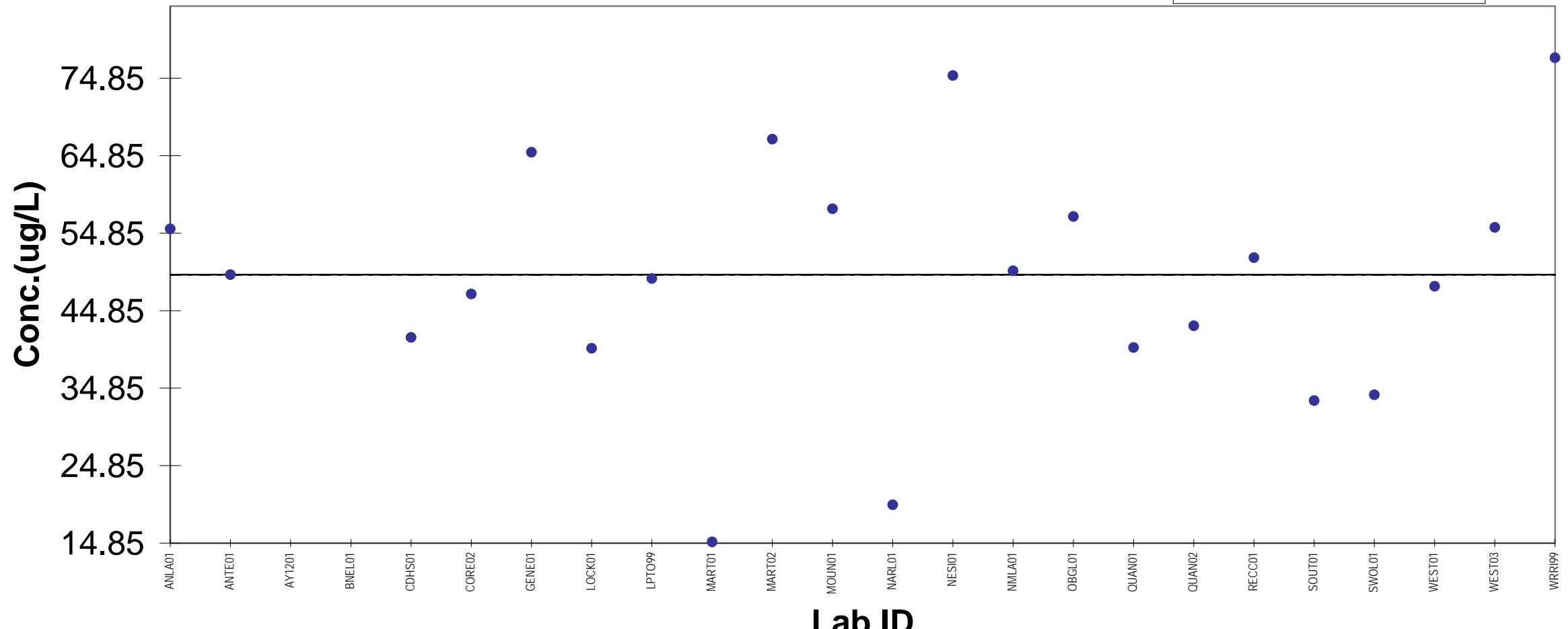
Fluoranthene MAPEP-01-W9

• Lab Result
— Ref. Value 41.87
- - - Mean 41.87



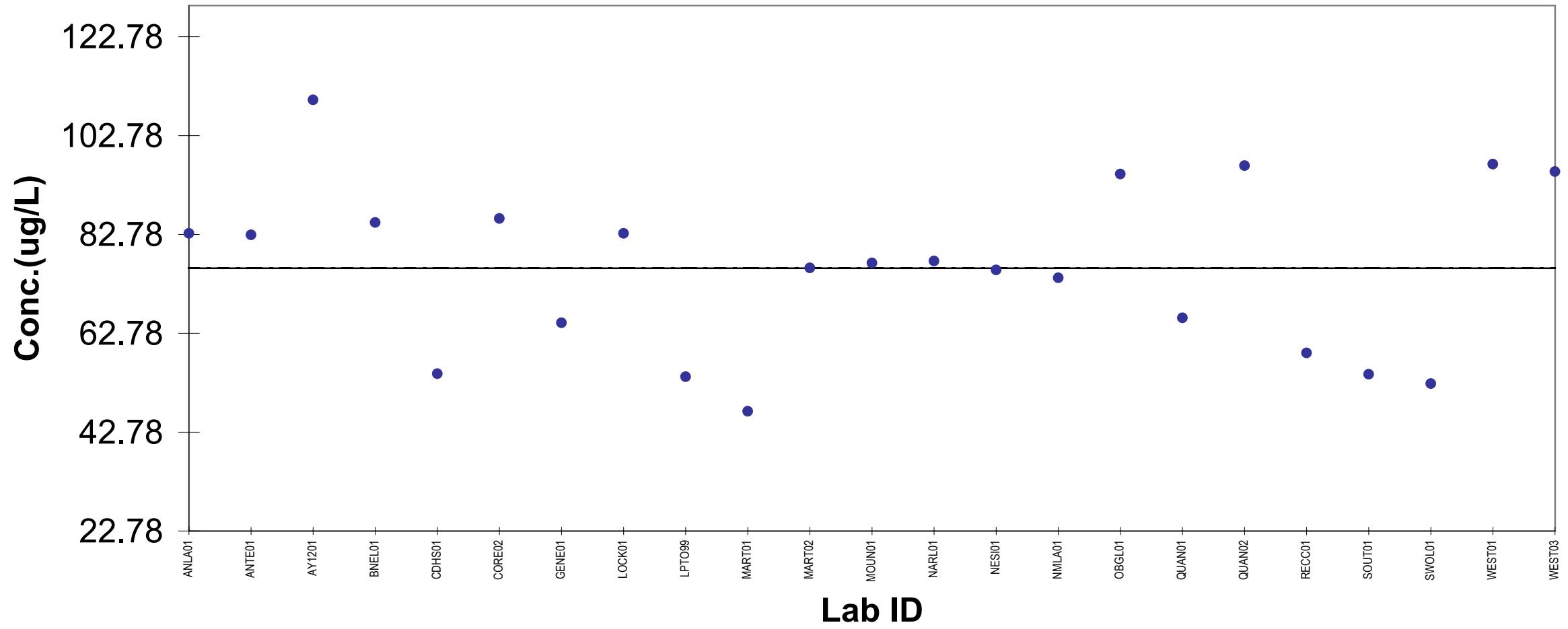
Pyrene MAPEP-01-W9

• Lab Result
— Ref. Value 49.5
- - - Mean 49.5



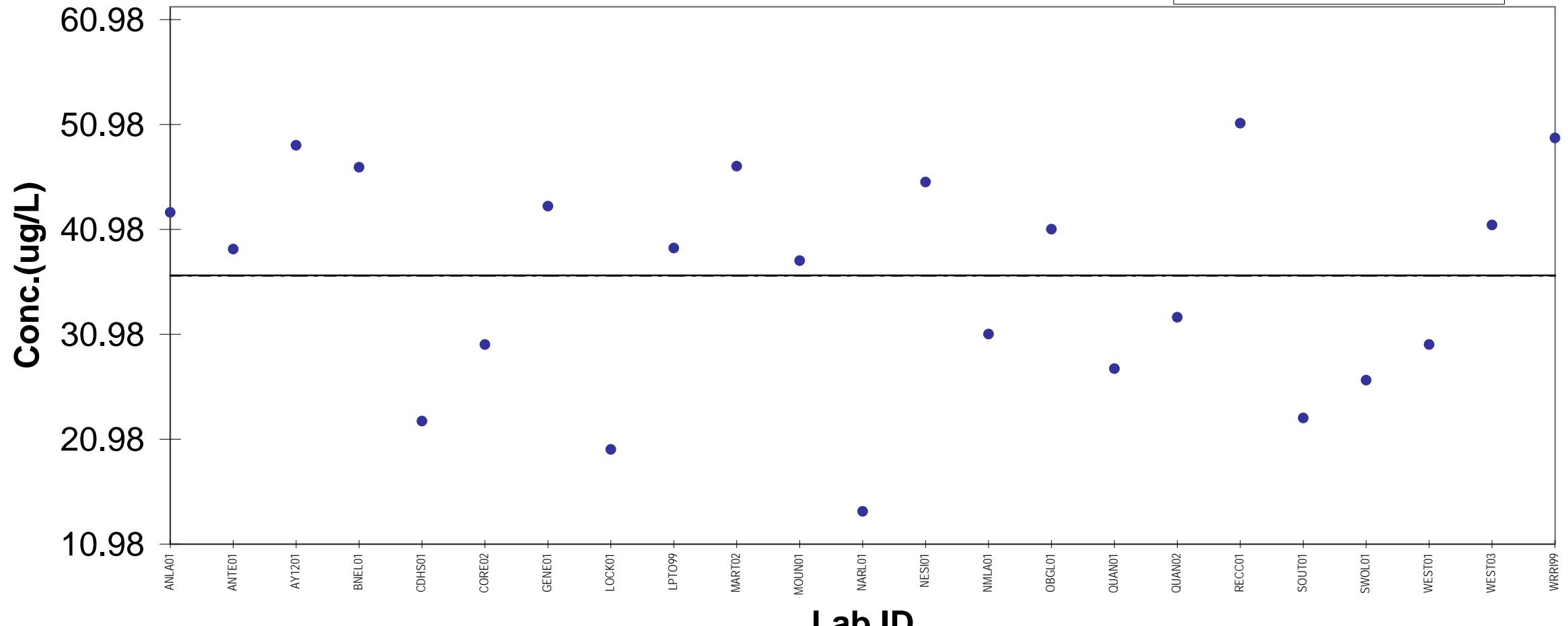
Hexachloroethane MAPEP-01-W9

• Lab Result
— Ref. Value 75.94
- - - Mean 75.94



Benzo(a)anthracene MAPEP-01-W9

• Lab Result
— Ref. Value 36.58
- - - Mean 36.58



APPENDIX

D

MAPEP-01-W9 Reference Values

MAPEP-01-W9 Target Analyte Reference Values and Uncertainties

Stable inorganic and radiological analytes. Uncertainties are listed at one standard deviation.

Antimony	1.527 ± 0.008	milligrams/Liter
Arsenic	0.238 ± 0.001	milligrams/Liter
Barium	2.86 ± 0.02	milligrams/Liter
Beryllium	NOT ADDED	milligrams/Liter
Cadmium	0.191 ± 0.001	milligrams/Liter
Chromium	0.382 ± 0.002	milligrams/Liter
Copper	4.77 ± 0.03	milligrams/Liter
Lead	0.477 ± 0.003	milligrams/Liter
Nickel	0.763 ± 0.004	milligrams/Liter
Selenium	0.763 ± 0.004	milligrams/Liter
Silver	NOT ADDED	milligrams/Liter
Thallium	1.145 ± 0.006	milligrams/Liter
Uranium-Total	0.63 ± 0.02	milligrams/Liter
Uranium-235	0.00120 ± 0.00006	milligrams/Liter
Uranium-238	0.63 ± 0.02	milligrams/Liter
Vanadium	0.716 ± 0.004	milligrams/Liter
Zinc	0.31 ± 0.01	milligrams/Liter
Americium-241	1.19 ± 0.02	Becquerel/Liter
Cesium-134	28.5 ± 0.3	Becquerel/Liter
Cesium-137	286 ± 3	Becquerel/Liter
Cobalt-57	143 ± 6	Becquerel/Liter
Cobalt-60	141 ± 2	Becquerel/Liter
Iron-55	9.2 ± 0.5	Becquerel/Liter
Manganese-54	246 ± 3	Becquerel/Liter
Nickel-63	88.3 ± 1.2	Becquerel/Liter
Plutonium-238	False Positive Test	Becquerel/Liter
Plutonium-239	2.99 ± 0.03	Becquerel/Liter
Strontium-90	4.80 ± 0.08	Becquerel/Liter
Uranium-234	0.98 ± 0.03	Becquerel/Liter
Uranium-238	7.8 ± 0.2	Becquerel/Liter
Zinc-65	67.3 ± 1.3	Becquerel/Liter

MAPEP-01-W9 Target Analyte Reference Values and Uncertainties

Semi-volatile Uncertainties are the 95% Confidence Interval for the Mean of the Data
(i.e., Biweight Mean $\pm t_{(0.95)}^*$ Biweight Standard Error)

1,3-dichlorobenzene	41.4 ± 3.6	micrograms/Liter
hexachloroethane	75.9 ± 8.2	micrograms/Liter
nitrobenzene	49.4 ± 3.6	micrograms/Liter
2,4-dimethylphenol	72.1 ± 6.9	micrograms/Liter
2,4-dichlorophenol	61.4 ± 5.4	micrograms/Liter
1,2,4-trichlorobenzene	48.0 ± 3.5	micrograms/Liter
naphthalene	38.1 ± 2.8	micrograms/Liter
hexachlorobutadiene	32.2 ± 3.7	micrograms/Liter
2,6-dichlorophenol	37.3 ± 4.8	micrograms/Liter
2,6-dinitrotoluene	46.2 ± 2.9	micrograms/Liter
2,4-dinitrotoluene	86.4 ± 7.3	micrograms/Liter
diethylphthalate	40.0 ± 4.2	micrograms/Liter
hexachlorobenzene	39.3 ± 6.4	micrograms/Liter
anthracene	42.6 ± 5.9	micrograms/Liter
pentachlorobenzene	47.7 ± 8.2	micrograms/Liter
fluoranthene	41.9 ± 5.6	micrograms/Liter
pyrene	49.5 ± 7.4	micrograms/Liter
benzo(a)anthracene	36.6 ± 5.1	micrograms/Liter